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PROFESSOR OF PHYSICAL DIAGNOSIS IN THE NORTHWESTERN UNIVERSITY MEDICAL SCHOOL

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VOLUME IX

## SKIN AND VENEREAL DISEASES MISCELLANEOUS TOPICS

EDITED BY

W. L. BAUM, M.D.
HAROLD N. MOYER, M.D.

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# DEPARTMENTS

## SECTION I

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# SKIN AND VENEREAL DISEASES

## DERMATOSES IN CONSTITUTIONAL AFFECTIONS.

**The Skin as an Index of Diseases.** W. P. Cunningham[1] considers the skin of great value in the diagnosis of internal diseases.

A diagnostician can often get valuable information, for the direction of his efforts, from a preliminary survey of the skin. A trite demonstration of this fact is familiar to all in the jaundice accompanying disease of the liver. Bronzing of the skin leads us straight to the suprarenal capsules. We have all noted the earthy hue of carcinoma. The pallor of anemia is a matter of common observation; as a variety thereof, recall the greenish-yellow tinge of chlorosis. The red flush of fever is promptly appreciated even by the laity. Purplish ecchymoses are often the telltale sign of fracture. The same color disseminated in spots of various sizes over the lower limbs leads to the diagnosis of rheumatism; so do the shiny red painful infiltrations of erythema nodosum. The violaceous nose of chronic alcoholism hardly calls for comment. In passing it may be well to remember the preliminary stage of acne rosacea, and the terminal stage of rhinophyma. The golden deposits of xanthoma may betray an unsuspected diabetes. The brownish splotches of chloasma hint of diseased uterus or ovary. Melanotic nævi give warning of the sarcomatous predisposition. An exaggerated flush on one cheek with dyspnea hints which lung is involved in the pneumonia. Rose colored spots on the abdomen of a fever patient may clear up an obscure case even before a Widal test is available. Erythema, roseola, or

(1) N. Y. Med. Jour., Sept. 6, 1913.

petechiæ may settle a dubious diagnosis of cerebrospinal meningitis. The muddy look accompanying intestinal torpor is everywhere in evidence. No one will mistake the puffy, pasty skin of chronic parenchymatous nephritis, or the blue of cardiac insufficiency. Contrast the dry, atonic skin of chronic "intestinal" nephritis with the likewise dry but tense or even waxy myxedema due to an atrophied thyroid.

Herpes labialis is a sign of malarial infection. Herpetic lesions in association with a belt sensation or lightning pains suggest tabes. Of like significance in diseases of the nervous system are decoloration of the hair (gray or white in patches), falling of the nails, local perspirations, sudamina, ecchymoses, and bullæ. Note also the local variations of temperature, caused by diseases of the central nervous system.

Irritative lesions of the nervous system are frequently indicated by the so-called glossy skin, which is atrophied, thin and shiny, and tightly stretched over the subjacent tissues. Persistently recurring boils and genital pruritus may be diabetic. Mark the *cutis anserina,* algid skin of chill. Mark its occurrence also in acute intestinal disturbance. Angioneurotic edema, erythema multiforme and urticaria, variants of the one pathologic entity, products of a common cause, hark back to the autointoxication of intestinal putrefaction.

Chronic congestion of the face, neck, and ears, in connection with mental dullness, and feeble circulation, arouse a suspicion of chloral addiction. Persistent pruritus, general, local, or both, traceable to no eruption, and accompanied by nictitation, and contracted pupils, furnishes a pretty accurate picture of morphine habituation. Multiple small scars and abscesses, within reach of the patient's hand, indicate the manner of its administration.

Tophaceous deposits in the helix of the ear lead unerringly to the diagnosis of gout. Friability of the nails should suggest a search for other evidences of lithemia. Lithemia is a term treated with icy scorn by the pathologists of today, as conveying no scientific conception of the morbid condition to which it was applied; but in

the minds of its framers it clearly meant that state of overnutrition leading to the precipitation of excrementitious matters and the formation of calculi. It seems to Cunningham, even in the light of our present knowledge, that it is a very serviceable and expressive term.

How important it is to recognize the *digiti mortui*, the cadaveric, icy, shrunken fingers of Raynaud's disease!

Be not deceived by the dermatitis factitia of hystéria. Strangely appearing lesions that fit into no recognized pathological picture should always excite suspicion. If a woman presents herself with linear, angular, crisscross, or other bizarre configurations, confined to regions within access of her hands, search diligently for the stigmata of hysteria. Malingering for sympathy, for profit, or for deviltry, is not at all uncommon among women and even among men.

The clubbed fingers of tuberculosis point grimly to the lungs. Erythema induratum, lupus vulgaris, and scrofuloderma warn of the tuberculous diathesis. The various tuberculides indicate that the toxines of tuberculosis are active in the patient, and that graver manifestations may be apprehended.

Knowledge of the multiform eruptions of syphilis, and their differentiation from other dermatoses, constitutes a liberal education in dermatoses.

Early recognition of lepra is urgently demanded, in the interest of patient and community. While not actively contagious, it has been demonstrated that it is communicable after prolonged exposure. And whatever is to be done for the patient had better be done early if he is to receive any benefit. This early recognition can only come through acquaintance with its manner of invading the skin.

A good diagnostician overlooked scarlet fever in an adult male: The patient had the typical throat of tonsilitis. Opinion was pronounced in accordance with appearances. The usual remedies seemed to be effective in rather a tardy manner. After a week he was allowed to go about as before. In a day or two more he turned up at the doctor's office with the announcement that he had

some kind of a scaling skin disease. Examination revealed a general desquamation, distinctly scarlatinal. Here was a pretty mess! The patient lived in a large boarding house and worked in an office full of clerks married and single. The opportunities for the spread of the disease were ideal. The dilemma of the doctor was pitiful. If he confessed his error he was disgraced, if he concealed it he would be endangering the health of the community, and subjecting his patient to the possibility of a kidney complication. He threw himself on the mercy of the patient, fortunately a man of sense, admitted his culpable carelessness, had him sent to a hospital for infectious diseases, patiently bore the abuse of the mistress of the boarding house who had to submit to the annoyance of disinfection, and took to heart the lesson that it is prudent to investigate the skin before pronouncing judgment.

One glance below the neck band and he would have read on the cutis—writ large and unmistakable—the diagnosis, scarlet fever.

A 16-year-old girl, of good family, a quiet and reserved disposition, never known to go about without her mother, was attacked with "a sore throat." A physician diagnosed tonsillitis. Treatment was not strikingly effective. After a week another physician was called upon, who verified the first diagnosis, but could not understand the persistence. After a few days, a third man fell heir to the puzzle. His suspicions were lulled by the shy, modest demeanor of the girl, and the assurances of her mother, adroitly extorted, that she had absolutely no opportunity for misbehavior. Cunningham found the sharply circumscribed redness of the palatal arch suggestive of specific infection. Insisting on a complete examination, he uncovered a beautiful macular eruption and evidences of a preëxisting chancre. The girl admitted her fault. Pressed by her mother for an explanation, she said she had received the man in her own home when her mother had gone out.

That eruption had been present all the time that she was under treatment by the other physicians.

A woman of 44 years was bitten on the cheek by her

husband in a spirit of playfulness. In about two weeks a hard papule appeared. She consulted her physician after two weeks more, and he treated it for trauma. When it resisted his applications and adenitis of the submaxillary and the anterior chain of cervical glands demanded explanation, he expressed grave doubts of cancer. Much time was consumed in watching the progress of this possible cancer, and finally some two months after the appearance of the lesion Cunningham saw the case in consultation. The cheek presented an ulceration as big as a dime with indurated edges and a scanty discharge. The adenitis was spectacular. The patient's back and chest were dotted with large dark red fleshy papules of an unmistakable character. The patient was surprised that they had any bearing on the case as she thought they were hives!

They had been present a week, and had her physician searched her skin he would have awakened to her malady in a manner much more agreeable to himself. Of course, if he had had any suspicion of the true nature of the initial sore he could have had an examination made for the spirochete. But failing that, he would have come sooner, and by his own efforts, to a realization of the true state of affairs had he not ignored the cutis—*index morbi.*

**Internal Etiology of Dermatoses.** A. S. Clarke[2] divides the internal causes of dermatoses into toxic causes, neurotic causes, circulatory, eliminative, secretory and sexual causes, anemia and debility. The toxic causes include those of intestinal origin, those of autotoxic origin and those from disease toxemias. The intestinal causes include:

1. Toxic foods and drinks, *i. e.*, shellfish, strawberries, tomatoes, stale foods of any kind, wines, liquors, tea, coffee, and tobacco.

2. Protein toxemias from imperfect digestion of animal foods; individuals often evince an idiosyncrasy for some particular meat, while even milk is toxic for some persons.

(2) N. Y. Med. Jour., Sept. 13, 1913.

3. Carbohydrate intoxication from faulty digestion of sugars, starches and cooked sweets.

4. Intoxication from imperfect fat digestion, such as is frequently seen in babies. There is a true adage that a baby who spits up rarely has eczema. Eczema babies do better on a low fat content in their feedings.

The autotoxic causes have to do with disturbances of the internal secretions, *i. e.*, of the thyroid gland, pituitary body, adrenals, spleen, etc., and are disturbances of metabolism.

The contagious eruptive diseases, diabetes, Addison's disease, etc., are accompanied by toxemías which produce skin lesions.

The neurotic causes are mental overwork, worry (often seen in the circumscribed, patchy eczema on the hands and arms of school teachers), severe shock, neurasthenia, or reflex, as, for example, the eczema of dentition, which certainly is in part, at least, of neurotic origin. The causes of circulatory origin are various diseases of the heart and blood vessels, resulting in more or less severe and constant changes in the circulation of the skin, as in varicose eczema of the legs.

The eliminative and secretory causes result from imperfect elimination on the part of the skin itself, with retention of toxic and other products in the skin for a greater or less length of time, and imperfect functionating of its sebaceous and sweat glands, or from deficient kidney elimination, either functional or organic, resulting in extra work being forced on the skin as an organ of excretion; or from torpidity, congestion, or disease of the liver, as in the so-called gouty and uric acid eczema.

The sexual causes, which also have as an adjuvant the physiologic upset due to the introduction of a new function, are those due to disturbances of menstruation of whatever origin, to pregnancy, the menopause, or to sexual abuse.

The lesions which are the effects of anemia and debility are the acne of chlorotic girls, and senile eczema and pruritus.

**Dermatoses from Alimentary Toxemia** fall according

to J. Galloway[3] into four main categories: (1) Those resulting from disturbances of the blood vessels disappear, leaving no permanent trace. In this category may be grouped the varieties of urticaria, evanescent or chronic, and the different types of erythema, including the exudative and vesicating forms. (2) Morbid conditions in which an inflammatory lesion progresses to actual infiltration of the skin with cellular elements, terminating in dilation of the blood vessels, atrophy, persistent dermatitis, ulceration, or scarring. (3) Purpura in its different forms, punctate or diffuse, and often associated with other hemorrhage manifestations. (4) Pigmentation due to increase or abnormal distribution of the normal pigments, such as melanin, or, in other cases, to pigments derived from hemoglobin and due to hemolysis from the circulating intestinal toxins.

**Herpes and B. Coli.** The Medical Record[5], in an editorial rather ignoring the toxin element, remarks that the conception of herpetic fever as a clinical entity received considerable attention from early medical writers, although a number of diverse conditions were erroneously included under this name. This confusion was increased by the use of synonyms such as ephemeral fever, febricula, and catarrhal fever to connote the same morbid condition. Murchison designates as febricula a disease lasting from six to eight days with pronounced constitutional symptoms and commonly accompanied by herpes. Griesinger describes herpetic fever as a severe fever with no special localization and terminating with an eruption of herpes. It is generally recognized that herpes may be associated with a number of other conditions such as pneumonia, epidemic meningitis, malaria, influenza, and arsenic poisoning. But there are cases of acute illness in which, in addition to the fever and other constitutional symptoms, herpes is the sole manifestation. These are the cases which are characterized as herpetic fever. This condition is to be sharply distinguished from herpes zoster, which takes its origin from certain morbid changes in the posterior spinal

(3) Brit. Med. Jour., April 9, 1913.
(4) Aug. 23, 1913.

ganglia, and in which the herpetic eruption is preceded by the symptoms of neuralgia or neuritis. These neuralgic pains have never been noted in the case of herpetic fever.

H. Schottmüller[6] had a large number of cases of this condition, in the majority of which there occurred an extensive herpetic eruption, chiefly upon the face and particularly about the mouth and nose. Less frequently the eruption appeared about the eyes and ears and upon the neck. The simultaneous outbreak of many of these cases in the hospital suggested strongly an infectious origin and Schottmüller determined to ferret out not only the primary seat of the disease but, also, its possible bacterial cause.

In the majority of cases the cutaneous lesions occupy an extensive area about the mouth, upon both the upper and lower lips, to a much greater extent than is observed in pneumonia. In the beginning of the disease there are noted discrete patches of erythema and swelling, in the center of which the characteristic vesicles appear at the end of twelve hours. These vesicles increase in size and number, and in the course of the next few days their contents become cloudy and they burst spontaneously or as the result of mechanical irritation. The desiccation of the discharge results in an extensive crust formation, which in severe cases may be hemorrhagic. The patients complain of little or no pain, only a little burning being experienced in the beginning. The lesions heal in from eight days to two or three weeks and, unlike herpes zoster, scars are never left behind. In some cases the herpetic eruption appears upon the inside of the lips and upon the gums and even upon the tongue. Of noteworthy interest is the fact that the cutaneous lesions are not confined to any particular zone of innervation, although in many instances the eruption corresponds to the various branches of the trigeminus on both sides.

Remarkable is the fact that all of Schottmüller's fifty cases occurred in women and that the condition was attributed to affections of the genital or urinary organs. In the majority of cases the patients were admitted to

(6) Beitr. zur Klinik d. Infektionskrankh., Vol. 1, No. 1, 1912.

the hospital on account of fever following an abortion and in a small percentage there was a cysto-pyelitis. Bacteriological investigation of all these cases showed without exception the presence of *B. coli*, mostly in pure culture. This was a surprising discovery. Schottmüller admits that he has seen herpes accompany post-abortal sepsis, caused by other microörganisms such as the pneumococcus and streptococcus, but in none of these instances were there such extensive eruptions as in the case of *B. coli* infection of the genito-urinary tract. In some of the cases the variety of microörganism was *B. coli communis;* in others the variety was the *B. coli hæmolyticus,* and in still others there was present the lactic acid bacillus. Schottmüller believes the colon bacillus infection is the cause of the herpes. In some of the cases there was a local infection of the endometrium; in others, the blood stream was invaded by the germs, the endotoxins of which are regarded as the immediate cause of the herpetic eruption.

Another interesting fact is pointed out, namely, that herpetic fever occurs in epidemics, chiefly in the spring and fall. At other times *B. coli* infections may occur without giving rise to the eruption. No case of direct contagion has been observed. There are no special constitutional symptoms that distinguish *B. coli* infection accompanied by herpes from the infection not so accompanied. In both instances headaches, malaise, and arthritic pains are present. As a rule the illness starts in suddenly with a chill, which is followed by high fever. The question as to why the eruption appears upon the face rather than elsewhere (herpes progenitalis is never observed in these cases) is answered by the assumption that the face has a special affinity for the *B. coli* toxin.

The appearance in a woman suffering from a post-abortal infection of an extensive herpes about the face is of considerable diagnostic value, inasmuch as it points to *B. coli* as the probable underlying cause. From the viewpoint of prognosis this microörganism is a benign one, provided, however, that no subsequent mixed infection occurs.

**Carcinoma Skin Reaction.** Elsberg, Neuhof and

Geist in 1910 proposed a skin reaction for carcinoma, which consisted in the subcutaneous injection into the forearm of 5 minims of a 20 per cent suspension, in normal salt solution, of washed human red blood corpuscles, obtained from a healthy, normal individual. Their work comprised 684 injections in 432 patients. Analysis of their cases shows a characteristic reaction in 89.9 per cent of the cases suffering from carcinoma, and no reaction in 94.3 per cent of non-malignant cases.

Landsteiner and Moss showed that every human being falls into one of four groups as regards iso-agglutination and iso-hemolysis, a grouping established shortly after birth and lasting throughout life.

Gorham and Lisser[7] determined that there is no relationship between hemolysis in the test tube and the positive skin reaction, but that the nature of the corpuscles used for injection is a matter of great significance, since positive reactions occurred with one or two of the corpuscle groups and not with the others. The corpuscles of the fourth group, which are neither agglutinated nor hemolysed by any sera *in vitro* could be used for carrying out the test. Not a single instance was observed in which the corpuscles of group IV gave a positive reaction without the corpuscles of the other three groups also reacting.

H. Lisser and A. Bloomfield[8] experimented on 56 verified cases of carcinoma and sarcoma and 94 healthy individuals or persons suffering from non-malignant complaints, using only corpuscles obtained from persons of the fourth group.

The corpuscles were injected subcutaneously (from 0.33 to 0.5 c.c. of a 20 per cent. suspension) into the forearm. The reaction begins to appear within from three to five hours after the injection, gradually increasing in intensity until it has reached its height at the end of from six to eight hours. When fully developed, it appears as a somewhat irregular oval area, measuring from 0.5 to 0.6 cm., with a well-defined margin. The color varies from a brownish red to a maroon, with frequently

(7) Johns Hopkins Bull., December, 1912.
(8) Med Rev. of Rev., February, 1913.

a bluish to purple tinge. The lesion is distinctly raised from the surrounding skin, slightly boggy on palpation, and often somewhat tender. Negative cases show either the point of the needle puncture or a small flat area of varying color.

Of the 56 malignant cases, 37 or 66 per cent reacted positively, and 19 or 34 per cent negatively. In three of the positive cases in which the malignancy had not been suspended, the positive skin reaction was the indication for exploration and the discovery of the cancer. Of ten cases of malignant disease operated upon and supposedly cured, the skin test was negative in all. In 94 non-malignant conditions, the reaction was positive in 8 cases or 8.4 per cent and negative in 86 or 91.6 per cent.

**Dermatitis Symmetrica Dysmenorrhœica,** as the name suggests, occurs in women with dysmenorrhea. There are always accompanying disturbances of the heart and vasomotor system, and not uncommonly psychic abnormalities. The skin-lesions appear in chronic sequence, are almost invariably symmetrical in distribution, and present the picture of a moist dermatitis, an urticarial erythema or a spontaneous necrosis.

In a case described by Friedelberg[9]—a woman, aged 30—there was a history of dysmenorrhea associated with psychic symptoms. On her first visit to the clinic, and for some time subsequently, the lesions were regarded as artefacts. During her detention there, however, in spite of the most careful supervision by night and day, no evidence of such a genesis was forthcoming.

Their appearance, mostly nocturnal, was always ushered in by an intense burning sensation which awoke the patient. The seat of this sensation became soon erythematous, and later urticarial in appearance. If the condition progressed, the upper epithelial layers were lifted off, and bullæ made their appearance, or small vesicles which amalgamated. Their contents rapidly dried up and brownish-yellow crusts resulted, which fell off in the course of a few days, leaving behind them darkly pigmented spots—the evidence of past attacks of the malady in several locations. The sites attacked, also,

(9) Urolog. and Cutan. Rev., August, 1913.

resembled very closely those affected in Matzenauer and Polland's cases. The affection began on one side of the face, spread to a contra-lateral position, thence to the trunk on its anterior aspect, and the arms and legs in symmetrical sequence. The dorsal aspect of the trunk and extremities remained free.

Friedelberg emphasizes the menstrual history, much irregularity and amenorrhea. He believes in H. W. Freund's theory that pathologic alterations of metabolism may result as a sequel to abnormal menstruation, and that such disturbances may have their clinical manifestations in certain unexplained skin-lesions. According to the researches of Hamburger and Neumann, lipoid substances, such as the ester of cholesterin, are present in abnormal amounts in the Graafian follicle at menstruation; and it is the cholesterinemia caused by the failure of the follicle to discharge its contents (or some other toxin not found by him) that he offers as a possible explanation of the ensuing skin-lesions in the case described.

He cites experiments by Schickele, which suggest that an antithrombin and a depressor substance can be obtained by expression from the ovary and uterus, in support of his view that toxic substances may easily reach the circulation from these sources if their functions be disorganized. A different view of the pathology is taken by Kreibich, who considers that the lesions have an angioneuritic basis, and brings forward a considerable amount of evidence in support of his opinion. Mathes criticises the views of Matzenauer and Polland. He maintains that their conclusions, based on the work of Neumann and Hamburger, are too far-reaching and too insecurely established, and agrees with Kreibich's theory of an angioneurosis.

**The Bed-bug and Leprosy.** Two articles appeared simultaneously, one by Sandes[10] and the other by Long, in which it was stated that a considerable percentage of the bed-bugs experimentally fed on lepers were found to contain the leprosy bacilli. Furthermore, a large percentage of the bed-bugs caught within the dwellings of

(10) Brit. Med. Jour., Vol. II, 1911.

lepers contained acid-fast bacilli, presumably the bacilli of leprosy, while those caught in the dwellings of healthy people contained none. The presumption was that bed-bugs might play an important part in the transmission of this disease. In 1911 D. Thomson[1] attempted to confirm these observations by feeding a number of bed-bugs on two cases of leprosy. One was a case of the maculo-anesthetic type, the other was of the nodular variety. Seventeen bugs were fed directly on the nodules of the latter case, and four on the patches of the former. They were killed and examined from two to ten days afterwards for acid-fast bacilli, but none could be found; numerous control bugs were examined, with similar negative results. Thomson was unable to make any further investigations on the subject until 1912. He spent the last three months of that year in Panama, and had ample material at hand for continuing the work. In the leper asylum at Palo-seco Thomson fed 84 bed-bugs on various cases of leprosy, acute and chronic, but was unable to find any trace of acid-fast bacilli in these insects afterwards. Seventeen bed-bugs were caught in the beds of the patients at Palo-seco, and he obtained eighteen more caught on the mattresses of the beds in the leper asylum at Trinidad. All of these likewise showed no trace of acid-fast bacilli. A total of 105 bugs fed on lepers and 35 caught in the beds of lepers, therefore, gave no evidence that these insects harbor or transmit the disease. A further total of 107 bed-bugs were examined as controls; 21 of these were caught in dwellings in Liverpool, the remainder were caught in the Spanish wards in Ancon Hospital in Panama. The controls also gave negative results. The Ziehl-Neelsen stain was used throughout.

**Sporotrichosis Synovitis,** according to H. Gougerot and G. Levi-Frankel,[2] mimics acute synovitis of pyogenic origin, subacute gonococcic synovitis, and chronic tuberculous synovitis. The diagnosis is easily made by culture, agglutination, or complement fixation methods, and the readiness with which multiple foci disappeared

(1) Lancet, Oct. 6, 1913.
(2) Rev. de Chir., November, 1912.

under potassium iodide in a case reported by the authors leads them to emphasize the importance of differentiating this form of arthritis from the tuberculous variety.

**Vascular Disorder in Lupus Erythematosus.** The coexistence of lupus erythematosus with the so-called "chilblain circulation" has been recognized for a long period. It is one of the stock questions to ask in cases of this affection, whether or not the patient suffers from chilblains. The more carefully one comes to examine cases of lupus erythematosus the more frequently will some abnormality of the circulatory system be found. Chronic, persistent redness of the hands, which feel corpse-like and clammy, even though unaccompanied by actual chilblains, are often associated with lupus erythematosus, say, of the face. Another type of vascular disturbance is that usually considered to be the earliest stage of Raynaud's disease, viz., "dead fingers." Paroxysmal lividity of one or more fingers, perhaps alternating with cyanosis, are well-known vasomotor disturbances which are sometimes seen, it is true, in patients whose cutaneous system is normal; but, as Hartzell[4] has recently pointed out, the relationship between the phenomena of Raynaud's disease and lupus erythematosus is "intimate and real and not accidental." Several cases of this nature are collected, most of them having been shown before English or French dermatological societies, and in nearly 43 per cent of them the circulatory phenomena were paroxysmal in character. Hartzell considers that some toxin circulating in the blood may act primarily upon the vessel walls, causing both vasomotor and inflammatory changes in the skin and subcutaneous tissues. In this connection it may be noted that the modern conception of lupus erythematosus places it in the class of toxic erythemata.

More recently the question of the integrity of the vascular system has been investigated by David Walsh, who found that many cases of erythematous lupus are intimately associated with some disturbance of the circulation, perhaps unsuspected by the patient. Even arteriosclerosis, apart from any organic heart lesion, may prove

(4) Urolog. and Cutan. Rev., February, 1913.

to be at the foundation of some of these chronic cutaneous disorders, including lupus erythematosus. The value, therefore, of vasomotor tonics, such as ichthyol, when administered internally in the latter disease, is at once appreciated, and similarly, the use of cardiac tonics, such as strychnine or digitalis, may be of the greatest service in the treatment of the vascular disturbance.

**Erythema Nodosum from Sepsis.** Bruusgaard[5] reports two cases of erythema nodosum in which the primary lesion was apparently inflammation in the subcutaneous tissue around a vein. There was a history of acute articular rheumatism in one patient and of syphilis in the other. Erythema nodosum, Bruusgaard believes, is due to an attenuated pyemia.

**Urotropin Rash with Erythema Multiforme.** The case, a 33-year-old man, is reported by A. Sachs.[6] The eruption was lichenoid and bright red, sparing the palms and soles, face and scalp. The patient had suffered from a relapsing erythema exudatium multiforme for two years. He was given urotropin. The rash thereupon altered its character and became lichenoid, and constitutional symptoms such as headache and pyrexia appeared. Formalin was demonstrated in the urine. When the manifestations improved, the drug was discontinued. They became aggravated directly it was re-administered.

**Disseminated Lupus Vulgaris after Measles** is reported by J. H. Macleod.

A child in the convalescent stage of the fever developed an eruption of reddish-brown spots, which when first noticed were about the size of a split pea and were situated on both arms. These lesions gradually have grown, in a period of two years, until at present they vary in size from a dime to a half dollar. They are confined to the arms, there being nine on one arm and ten on the other. The lesions are of the lupus vulgaris type only; they have been considerably inflamed by some irritating ointment and several of them have developed ionpetigo pustules. The child is one of a family of

(5) Norsk Magazin f. Lægevid., March, 1913.
(6) Arch. f. Derm., April, 1913.

twelve, none of whom has tuberculosis; nor, as far as can be ascertained, is there any in the antecedents. Physical examination of the child failed to reveal any other stigmata of tuberculosis. This fact suggests the possibility that they were the result of an embolic shower of tubercle bacilli, emanating from some broken-down focus of tuberculosis, such as a mesenteric or bronchial gland, which, on reaching the cutaneous capillaries, there produced the tuberculous lesions.

**Alopecia Pathogenesis.** The evidence, remarks Dyce Duckworth,[8] in favor of a parasitic origin appears to be as uncertain now as it was forty or fifty years ago. The evidence of infectiousness which is so preëminent in parasitic conditions is plainly wanting here. It is certain that the neurotrophic theory has been steadily gaining support during the last thirty years. It would be difficult, for example, to conceive either a parasitic or a toxic etiology for such a case of universal alopecia as the following: A gentleman was thrown from a dog-cart and sustained an injury to his hand. Shortly afterwards alopecia set in and became total and has remained so. Other cases with a similar history are on record. The hair papillæ have been found so unduly sensitive after some injuries to the head that cutting of the hair became a painful process.

Cases of alopecia dependent on lesions of the nervous system are not all exactly alike in their origin and cause. Actual sensitiveness and pain are rarely met with. Neuralgia is recognized as a cause of disturbed nutrition in hairy parts of the body, leading to baldness, change of texture and color of the hair, sometimes with cutaneous pigmentation. It is alleged by some observers that there are preliminary changes in the affected areas such as redness, and tingling sensations, which pass off before the hairs fall out. There is an obvious atrophy of all the tissues of the bald area. The skin is smooth and glossy, there is no seborrhea, and the whole surface of the patch is distinctly depressed below the level of the adjacent and unaffected portions of the scalp. What can the significance of this condition be other than plain evidence of a localized trophic lesion of the nervous system?

Areas of leucopathia (vitiligo) have been described in association with alopecia areata (McCall Anderson).

With the recovery of papillary activity, which indicates the return of normal trophic conditions, we find the wasted areas becoming more plump and movable and attaining the level of the healthy portion of the scalp as the new lanugo hair is in formation. All attempts to inoculate this malady have hitherto failed.

The occasional occurrence of true alopecia areata in several members of one family is an indication of familial inherited tendency, and this fact may be considered as further evidence for the neurogenic theory. The subjects of this malady are rarely in sound health. Privation and defective hygienic environment are not seldom to be noted in them. Anxiety, sorrow and worries are common antecedents in the case of older sufferers. These are factors not to be ignored, and they all provoke nerve lesions. Locally no parasiticides are necessary. Turpentine and other simple rubefacients suffice for topical application.

[There is no atrophy of the skin in alopecia areata. The lower level of the affected area is due to the relaxation of the skin as a result of the loss of the hair roots. When the roots regenerate the level is restored. The general health of such patients I have usually found good.—Ed.]

**Alopecia and Circulatory Disorders.** Walsh[9] has carefully investigated thirty-six cases of alopecia areata with a view to determining the etiology of the disease. He comes to the following conclusions: The abnormal loss of hair, whether acute or chronic, diffuse or patchy, in the majority of cases is associated with some serious cardio-vascular defect which constitutes an essential predisposing cause. Given this predisposing cause, the exciting cause may be one of various bacterial, chemical or other physical or mental agencies acting either directly or indirectly. Alopecia areata is simply a localized form of diffuse baldness, and both forms are probably due in most cases to an exciting traumatism and

(8) Lancet, Apr. 19, 1913.
(9) Brit. Med. Jour., Oct. 18, 1913.

to predisposing cardiovascular defects. The predisposing cardiovascular condition may be valvular, myocardial or functional. It may be arteriosclerosis or a neurovascular condition, as exophthalmic goiter or Raynaud's disease. In some cases the alopecia may be a sign of failure of compensation. For instance, when an attack of influenza breaks down the compensation of a pre-existing valvular lesion, an acute shedding of hair may follow. From a pathologic point of view, the predisposing part played in these cardiovascular cases depends on a disturbed balance of the surface circulation, and acts in a twofold manner, by diminishing the natural local defences of the skin circulation to the invasion of bacteria from without, and by predisposing to the formation of clots, with subsequent damage to nutrition and shrinkage of the capillaries and fibrosis, and by inducing lymph stasis. The term idiosyncrasy applied to baldness and various skin complaints in many cases simply indicates a predisposing cardiovascular defect, and in much the same way the so-called hereditary tendency to baldness or certain skin complaints in all probability means an inherited tendency to cardiovascular complaints. Thirty-six consecutive cases were investigated. In twenty-four of these there existed valvular disease of the heart, in each instance confirmed by independent medical examination. Three other cases showed arteriosclerosis, while in three patients only was no marked circulatory trouble noted. The prognosis and treatment in baldness as well as in many other skin diseases must, to a great extent, depend on the state of the cardiovascular system.

PLATE I.

**Herpes zoster, eight days' duration.**—***Post Graduate Hospital, Chicago.***

PLATE II.

Lupus erythematosus of some years' duration, showing atrophy from previous *x*-ray treatment.—*Dr. P. F. Shaffner's patient.*

## SPECIAL DERMATOSES.

**External Causes of Dermatoses.** These causes may be classified as parasitic and non-parasitic, according to G. M. Mackee.[1] The first group consists of animal and vegetable parasites.

One of the commonest animal parasites is the *acarus scabiei* (itch mite). The female insect burrows under the epidermis looking for a suitable place to deposit her eggs, leaving a trail of excrement that excite itching, inflammation, and other symptoms, and producing a disease known as scabies or the itch.

Equally common are the various forms of pediculi or lice—*Pediculus capitis* (head louse), *Pediculus corporis* (body louse), and *Pediculus pubis* (pubic or crab louse). The body louse inhabits the underclothing, the head louse ranges freely over the scalp, being protected by the hair, and the pubic louse attaches itself to a hair close to the skin. The saliva of these insects produces intense itching, with consequent excoriations, infections, etc., the sum total of which is known as pediculosis capitis, corporis or pubis.

The brown tail moth, a recent arrival in this country from Holland, produces an inflammation of the skin known as brown tail moth dermatitis. It is probable that the "nettling" hairs of the moth and its cocoon and caterpillar are responsible for the cutaneous irritation which is usually on the exposed parts of the body. The dermatitis produced by *Pediculoides ventricosus* is known by the names straw or grain itch, acarodermatitis urticarioides, mattress itch, etc. The eruption is widespread and consists of papules, macules, urticarial wheals, vesicles, and pustules. The flea, the bed-bug, wood-tick, guinea-worm, *Acarus folliculorum,* gadfly, and various other animal parasites of temperate and tropical cli-

(1) N. Y. Med. Jour., Sept. 13, 1913.

mates, too numerous to mention, may produce inflammation of the skin. It might be added that as a rule the eruptions caused by animal parasites are not difficult of diagnosis; but associated secondary eruptions, such as eczema, may prove an embarrassing complication.

The vegetable parasites are of rather more importance than those of the animal kingdom because of the numerous and complex types of eruption produced and, at times, the difficulty of diagnosis.

*Achorion Schoenleinii* is the etiological factor in favus, a disease which may attack any part of the body at any time of life.

*Trichophyton.* There are several varieties of the ringworm fungus. These fungi cause a rebellious inflammation of the scalp in human beings under the age of puberty. Thus, tinea tonsurans is a rare affection in the adult, but extremely common and troublesome in children. According to the variety of fungus, there may be only a scaliness and alopecia, or there may develop large vegetating tumors. Parasitic sycosis, or tinea barbæ, is a similar affection of the bearded region of male adults. In the skin the fungi produce scaly, circinate, easily cured lesions familiar to you all. Quite recently Whitfield and Sabouraud have demonstrated that the so called eczema of the groin and that between the fingers and toes is of vegetable parasitic origin. And in this connection it must not be forgotten that the so called eczema marginatum is caused by the ringworm fungus. There are some special forms of ringworm which should be briefly mentioned. Tinea imbricata is a disease of tropical countries due to a fungus closely resembling the trichophyton, but possibly belonging to the aspergillus. *Microsporon furfur* produces a fawn-colored, slightly scaly eruption known as tinea or pityriasis versicolor. It is at times confounded with chromophytosis and other forms of pigmentation. In passing, erythrasma, dhobie itch, and pinta may be mentioned. Most of the vegetable parasites are transmitted from one patient to another, but it must not be forgotten that domestic animals harbor some of these organisms.

*Actinomyces* or ray fungus is the causative factor in

actinomycosis or lumpy jaw, a serious disease that is often confounded with syphilis, tuberculosis, and other diseases. The lesions consist of nodules and ulcerations. The disease is usually limited to the mouth and face and is seen mostly in those handling cattle.

*The Blastomyces* is the organism of blastomycosis, a disease that is probably commoner than has been admitted and which, in all probability, is not infrequently diagnosed syphilis or tuberculosis, drug, eruptions, etc. The lesions are usually of a vegetating nature.

*The Sporotrichium* fungus produces an interesting disease (sporotrichosis) that was little known until within the last two or three years. The lesions resemble gummata and, as they yield to antisyphilitic treatment, it is not at all unlikely that many cases have been diagnosticated and treated as syphilis. The disease is seen mostly in those who come in contact with cattle. The Mackee classifies as non-parasitic causes, microbes protozoa, chemical actinic, caloric, traumatic and other causes.

The tubercle bacillus usually produces a warty growth, tuberculosis verrucosa cutis or anatomical tubercle. It may, however, produce lupus vulgaris or scrofuloderma, as is seen following ulcerative tuberculous adenitis. At times, also, ulceration of the buccal mucous membrane may occur, often giving rise to considerable diagnostic difficulty.

The organism of syphilis, the *spirochæta pallida,* interests us here only as the direct cause of the chancre and of syphilis.

There is considerable controversy over the pathogenicity of *Bacillus acnei.* The early lesions of acne may be due to the acne bacillus, while the pustules are produced by a complication with the staphylococcus.

The ever present *staphylococcus* is the cause of several cutaneous affections and is not above suspicion in others. The staphylococcus, together with a, not very virulent strain of the streptococcus, is the active factor in that common disease impetigo contagiosa. The staphylococcus is usually responsible for the pustular lesions of acne, eczema, and many other affections. In fact, whenever cutaneous pus lesions exist the staphylo-

coccus is likely to be at least a contributing element. This organism is the cause of sycosis vulgaris, a persistent pustular folliculitis of the bearded region, of furunculosis, and of carbunculosis, ecthyma, etc.

*The streptococcus* is an important factor in impetigo contagiosa, and is possibly frequently associated with the staphylococcus in other pustular affections, such as ecthyma. A special form of this organism, the streptococcus of Fehleisen, is the probable cause of erysipelas.

Sabouraud, Unna, and others have isolated organisms which they assert are the producers of the various types of seborrhea. *B. mallei* is the cause of glanders, *B. anthracis* is the specific factor in anthrax, and an unnamed organism has been found in the erysipeloid of Rosenbach, an affection resembling a mild erysipelas occurring on the hands of those who handle fish; the Ducrey bacillus is the cause of chancroid, etc.

Psoriasis, eczema, and other common diseases are considered by many to represent the reaction of the skin to bacteria. Even malignant neoplasms have been placed in this category. Many constitutional diseases, such as leprosy and possibly many of the exanthemata, have their starting point in a local inoculation. In many bacteriologic dermatosis there are important factors other than the bacteria themselves, such, for instance, as idiosyncrasy, a lowered opsonic index, anaphylaxis, etc. While on the subject I would call attention to a condition known as infectious eczematoid dermatitis, described by Engman and Fordyce. It consists of a dermatitis of the skin of eczematoid type, following an initial ulcer, pyodermia, boil, etc. It is auto-inoculable and probably due to the staphylococcus. Infantile eczema is possibly of this type, as well as the so-called impetiginous eczema. Pustular and follicular eczema may possibly be placed in the same category.

Iodoform, chrysarobin, pyrogallol, and many other substances produce a more or less violet inflammatory reaction in susceptible individuals. In the trades we find that varnish, dyes, paint, strong soap, certain woods, and many chemical combinations will effect an inflammatory reaction which, if allowed to continue, will develop into

a catarrh of the skin with the production of what is known as occupation or trade eczema. Knowles and Fordyce have written exhaustive articles on trade eczema, in which are enumerated all the various irritants which may produce this condition. Many plants contain toxic principles that can give rise to a very annoying eruption and, in some instances, as in the case of poison ivy (rhus), the outbreak is quite specific in its character. The eruptions produced by chemicals may consist of destruction of tissue by a caustic, a local hyperemia or inflammation, local or extensive vesiculation, edema, and even pustulation. In many instances the trouble will spread by auto-inoculation. Certain caustics like, for instance, nitric acid, may give rise to disfiguring keloids. While speaking of caustics it might be well to mention the intensely interesting disease known under the names of dermatitis factitia, malingering, or self inflicted eruptions. In speaking of the action of chemical irritants intertrigo must be considered. This is a dermatitis of the parts of the body where two surfaces are in contact and where moisture, friction, and unhygienic conditions are likely to occur. Miliaria, or prickly heat, is another condition due, partly to the action of perspiration that has not been allowed to evaporate, and partly to the friction of clothing.

Traumatism may produce slight wounds associated with reparative inflammation, or the injury may be associated with considerable loss of tissue. Gangrene may be a complication through interference with the circulation, while chronic conditions of a trophic nature might follow the effect on the nerve. Resulting scars may be disfiguring from a cosmetic standpoint, may interfere with physical functions, and, as sequelæ, might be mentioned keloids and even malignant degeneration.

Sunburn is the result, mainly, of the actinic action of the rays of the sun upon the unpigmented skin. Actinic light may be produced by electricity, and such rays will produce an erythema of the skin without the aid of heat. Some writers include sunburn or dermatitis actinica under the heading of dermatitis calorica or erythema calcoricum, as the case may be.

Dermatitis calorica ranges from a mild erythema to a severe and extensive necrosis. It may be due to the sudden application of fire or other form of excessive heat, such as the actual cautery or an electric spark, or it may result from the long continued effect of mild heat. Cold produces dermatoses, chilblains, frost bite, etc. Cold winds cause dermatitis hiemalis.

*X*-ray dermatoses are erythema, necrotic dermatitis. Keratoses, epitheliomata and telangiectosis.

## Constitutional Dermatoses.

**Occupation Dermatoses** are discussed by J. A. Fordyce,[1] who states that 2 per cent. of the dermatoses seen in his clinic are occupational. The great majority are trade eczemas and yield readily to treatment, but others are a serious inconvenience. Cutaneous vulnerability is more or less an individual peculiarity, for while there are persons who are so sensitive to an irritant—physical, chemical, thermal or actinic—that they react, after a short exposure or contact, with an acute dermatitis, others remain entirely unaffected. Occasionally such persons exhibit so high a degree of sensitiveness that instead of their acquiring an immunity, an increasing susceptibility is established. Fortunately, these cases are not very common; and workers, who are subjected to continuous injury, usually develop lesions only after a longer time, either from the summation effects of the irritant or because the resistance of the skin has been gradually undermined.

After such a cutaneous outbreak there is frequently a tendency to acute exacerbations at regular intervals or when the occupation is resumed. These eruptions may then persist for years. While the skin both anatomically and physiologically is endowed with a relative amount of protection against the action of irritant substances, by reason of its exposure it is subjected to injuries of every description and this trauma may lay the foundation for a subsequent eruption. In addition,

(1) Jour. Amer. Med. Assoc., Dec. 7, 1912.

there are other contributing factors, such as a "special susceptibility," a delicate skin or one presenting some congenital anomaly, as excessive dryness or ichthyosis, impaired gastro-intestinal, hepatic or renal functions, a depressed state of health, neglected hygiene of the skin, or its lowered resistance because of a pre-existing eruption.

The same etiologic factor is often found operative in both allied and unrelated trades owing to similar condition under which the work is done; when, for example, men or women are exposed to excessively dry or moist heat. Such an atmosphere leads to congestion and interference with the normal activity of the skin, which results in various inflammatory processes and sweat-eruptions like prickly heat. These affections are seen in cooks, stokers, firemen, foundry-workers, etc. A warm, moist atmosphere, such as laundresses work in sometimes produces a cystic conditions of the sweat-ducts of the middle third of the face, known as hydrocystoma. Cold, by favoring the development of chilblains, causes much suffering among persons who are obliged to carry on their work outdoors or in poorly heated places. In factories in which drastic measures are employed for the removal of dirt or stains, cleansing agents (like chlorinated lime or benzin), used on the hands supply the base for an eczema by divesting the skin of its natural secretions. Oil, which is used wherever machinery is installed, is the causative agent of acneiform and eczematous lesions. In occupations which necessitate standing, persons who have a tendency to varicose veins not infrequently exhibit this condition with a secondary eczema and ulceration. Slight traumatisms lead to erosions of the skin, which often become infected in patients who, owing to the venous congestion, have slight resistance. Young women, who are obliged to stand at their work, sometimes develop erythema induratum, which is characterized by nodules beneath the skin which may break down and produce ulcers. Some forms have proved tuberculous. The infection is usually of benign type and readily yields to rest in bed, improved nutrition and a change to better hygienic surroundings.

Many occupations bring about changes in the skin, which are not pathologic in the strict sense of the word, but are so characteristic for certain occupations that Blaschko calls them "trade stigmata." These included localized thickenings of the horny layer in shoemakers, tailors, musicians, and persons who follow outdoor occupations; staining of the hands of dyers and chimney sweeps; pigmentation in workers in silver from a deposit of the metal, and in millers from iron particles.

The skin may respond to the most diverse irritants by the production of a catarrhal inflammation, or may develop different types of eruption from the action of the same agent. An example of the former may be found in the trade eczemas and of the latter in the effects of tar, which may cause eczemas, acne, warty and epitheliomatous lesions, alone or intermingled.

The commonest type of occupation disease is eczematoid dermatitis. In a recent article Herxheimer enumerates seventy-four trades provocative of this form of disease. It may vary in grade and intensity from an erythematous and scaling dermatitis to a vesicular and bullous eruption. As the condition becomes chronic, infiltration of the skin takes place with desquamation and fissuring. With the cutaneous defenses lowered, pus infection is frequently superadded.

The excessive use of soap and water reduces the resistance of the skin by extracting the fat and macerating the horny cells. They may then act as direct excitants or prepare the way for some other irritant, as washing powders, etc. Severe eczemas of the hands and forearms are seen in those whose occupation requires them to have their hands continually in water, as in the case of washerwomen, housemaids, barkeepers, etc. In Fordyce's clinic nearly one-third of the occupation diseases during the previous year were seen in persons whose vocations necessitated the frequent employment of soap and water and, in some cases, the various cleaning alkalis.

In bakers a dermatitis of the hands and forearms is known as baker's itch. The exciting causes are heat, moist dough, and saccharin solutions. A mite said to

live in flour has, also, been incriminated. Candy-makers suffer from a similar eruption, as well as impetiginous lesions. Confectioners, bakers and preservers of fruit frequently show an eczema of the fingers and periungual tissues from the action of fruit acids.

Winfield describes a dermatitis in suger-refiners, which involves the hands, forearms and legs and resembles an impetiginous scabies. It has been asserted that a mite found in raw sugar is responsible, but this statement lacks verification. Oliver says that in sugar factories a condition known as "lymphangitis of sugar-makers" is sometimes found among the sugar-refiners and molasses-stirrers. It is accompanied by a slight constitutional disturbance and a crop of boils is not an unusual sequel. According to Gaillot the lymphangitis is an infection caused by *Staphylococcus pyogenes aureus.* This organism is said to be found, not in the freshly made molasses, but in the residue; the temperature of the factory and the condition of the skin of the workers favor its development.

Builders and masons develop an eczematous affection of the exposed parts of the body from the irritating effects of lime and cement. In stone-cutters an analogous condition is caused by the stone dust. A palmar dermatitis is also seen in brickmakers.

Metal workers, from the constant irritation of the dust or filings, or from the acids or turpentine used in the various processes, suffer from all grades of inflammation, even to intractable ulceration.

Printers and machinists, from contact with chemicals and oil, often develop a chronic eczema of hands and forearms. Electroplaters are liable to an inflammation of the hands and forearms from the use of a mixture of lime dust and olive oil in "finishing," and from sour beer in the process known as "scratch brushing."

Workers, who handle the chromates in the arts and trades, suffer from an eczematous eruption as well as from ulceration of the skin and mucous membrane, which shows little tendency to heal.

Hydrofluoric acid, employed in the manufacture of glass, the bleaching of cane, washing of manure, etc.,

produces sores of the nasal orifice and gums, and painful blisters and ulcers of the skin.

The irritant action of arsenic on the skin is well known. In the arts and manufactures in which its compounds are employed workers are attacked with eczema or ulcerative or gangrenous lesions, which may be present on the face, neck and extremities, but more especially on the genitals. In color-works, ulcers of the hands are designated "arsenic pock." Arsenic sulphide, which, with lime, is used in curing fur, sets up a very severe dermatitis in furriers, not infrequently with persistent ulceration.

Chemists are prone to inflammation of the hands, and sometimes of the face, from handling various drugs and chemicals. Their skin often develops so marked a susceptibility that minute quantities or even fumes will call forth an outbreak. Fordyce has several times noted a similar anaphylactic condition from formaldehyde solution in laboratory workers. Another familiar example of an eczema caused by chemical action is eczema of the hands of physicians and nurses from the use of antiseptics, notably mercuric chlorid and phenol (carbolic acid). These forms of dermatitis are very rebellious to treatment.

Among miners, smelters and photographers an eruption of erythematous or pustular type is sometimes encountered from the irritant effects of mercury. Photographers also are subject to an eczema, more especially of the terminal phalanges and nails, from reducing agents, particularly pyrogallic acid. In hat factories eczema of the hands is said to result from the manipulation of hot water acidulated with sulphuric acid.

The eczema of tobacco-workers is believed to be caused by the caustic solutions used to separate the tobacco leaves.

Calico-printers suffer from eczema, fissures and wounds which often become infected, and are attributed to the bleaching and cauterizing substances handled.

In flax-workers and linen-workers various skin affections are reported, among them a follicular eruption caused by the oils and irritating materials used in this

occupation. In Belgium many of the flax-workers show a peculiar abrasion and ulceration of the palmar surface of the hands. Fissures form, exfoliation takes place and, when the deeper structures are involved, the condition simulates a syphilitic lesion. An eruption resembling small-pox has been described on the forearms, arms and faces of workers who remove the bobbins from the spinning frames. From the pressure and friction caused by pulling threads, the persons who engage in this part of the work present callosities on their index-fingers.

Callosities of the palms are seen also in laborers, engine-runners, etc. Among miners they form a special dermatosis called "beat hand." Painful thickenings develop over the regions where the handle of the pick makes greatest pressure, along the bases of the fingers, and over the ball of the thumb and outer side of the hand. The subjacent tissue becomes inflamed, and not infrequently is further complicated by suppuration. To this condition the term "keens" is applied.

Warts sometimes form troublesome lesions on the palms of persons engaged in manual work. In some cases they are purely epidermic growths; in others, in which the epidermis has been removed, the underlying tissue as the result of irritation becomes the seat of exuberant granulations with papillomatous formation.

Dyers and workers in aniline colors are apt to develop eczematoid and pustular eruptions on different portions of the body. The bad effects are not limited to those in this trade, but the wearers of clothing prepared with certain of the dyes may ultimately be the victims of a severe dermatitis. The black, red and orange-yellow pigments are particularly irritating, marked inflammatory reactions having been caused by socks, gloves, underwear and shoes so colored. Fordyce has seen unusually severe forms of eczematoid dermatitis in barbers who employ proprietary anilin hair-dyes on their patrons. It is not an uncommon experience in dermatologic practice to be consulted for a dermatitis of the face, neck and ears, which has followed the application of one of these hair-dyes. In susceptible subjects the use of

hair-tonics may produce similar trouble. Another dermatologic condition common in anilin workers is hyperidrosis of the palms caused by washing the hands with chlorinated lime for the removal of the dyes. This affection is also seen among employes in chlorinated lime and soda works.

The manufacture of calcium chlorid and sodium and potassium chlorid by electrolysis is sometimes attended by an erythematous and edematous inflammation of the face of the workmen, resembling erysipelas. This eruption is attributed to the sodium hypochlorite that is formed. With the subsidence of the acute process, an acneiform eruption is left behind, the so-called chloracne. This acne is the commoner cutaneous malady seen in this occupation and is characterized by the early development of blackheads on the face, trunk and extremities, followed by a grayish discoloration of the face. Inflammation and suppuration of the follicular glands not uncommonly is followed by nodules, pustules, boils and disfiguring scars.

Tar-workers and paraffin-workers develop a similar eruption which may last several months and then change to the so-called "tar itch." This affection is accompanied by hyperkeratosis and increased activity of the sebaceous glands, forming plaques and crusts, with the further development of multiple warts, one or more of which may degenerate into malignant growths. The disease affects chiefly the hands, forearms and scrotum. It progresses slowly and in many instances no recurrence takes place after removal of the epithelioma. Oliver cites the case of a man aged 58 who had worked among coal-oil and tar products for thirty years. He presented numerous indurated patches, some of which had ulcerated, as well as multiple black warts and scars, the remains of old ulcers. His son, aged 27, following the same employment, developed a malignant growth of the forearm, which necessitated amputation. Metastases of the axillary and cervical lymph-nodes took place and the patient succumbed to secondary carcinosis.

Cancer in chimney sweeps has been reported chiefly from England. The soot produces a chronic irritation

of the skin and when retained in such regions as the folds of the scrotum causes warty growths which become epitheliomatous. In some instances the hands, arms and thighs have been involved. With the advent of machinery for cleaning chimneys the incidence of scrotum cancer has been markedly reduced. It is reported that gardeners, who employ soot for the protection of plants from slugs, in a like manner show the effects of this irritant in the development of malignant growths of the hands.

Gardeners and florists frequently suffer from some form of inflammation of the hands and arms occasioned by contact with certain plants. It is estimated that between sixty and seventy plants possess this irritant action and the power to induce a dermatitis. The more familiar ones are poison ivy, poison sumac, primrose, chrysanthemum and eucalyptus, the eruption varying from a simple erythema to marked swelling with the formation of vesicles and bullae. Not only are the exposed parts involved, but the affection may be carried by the hands or clothing to other portions of the body. As in Rhus toxicodendron, the active principle probably is an essential oil. Lacquer, which is obtained from a Rhus, produces a dermatitis either by direct contact or through the fumes of evaporation. The symptoms, consisting of fever and edema of the skin of the face, limbs and generative organs, nasal and conjunctival catarrh, and a papular eruption of the legs and forearms, appear in a few hours.

The resinous dust of certin hard woods, like teak, ebony, satinwood, rosewood and others, will occasionally set up a dermatitis in carpenters and joiners. In teak, the exciting agent is believed to be an essential oil derived from the central part of the tree and present in the dust. The symptoms are sometimes very severe, the eruption becoming generalized and accompanied by vomiting. It may last for several months and is quite apt to recur when the patient resumes work.

The so-called polisher's itch of the forearms and hands found in furniture-polishers, is attributed to the methyl or impure alcohol present in varnishes and

polishes. Impure turpentine and benzin used for cleansing purposes likewise provoke an eczema of the hands.

In persons, who follow an outdoor occupation the uncovered portions of the skin sometimes undergo peculiar degenerative changes. Under the name of "sailor's skin," Unna has described an affection which he observed chiefly in seafaring men. A diffuse cyanotic redness, not unlike chilblain, develops at first on the ears, adjacent parts of the cheeks and temples, the backs of the hands and fingers. The skin then becomes mottled, pigmented, rough and hard and in places papillomatous. These warts may last for years and slowly undergo a malignant change. A similar condition is seen on the face, neck and hands of people who follow agricultural pursuits. The cause is sought in the actinic rays. The effect of light on the skin is illustrated in *x*-ray workers, whose hands, unless protected, become the seat of a mild erythematous, squamous eruption, more or less persistent, which is succeeded by pigmentation, telangiectases and atrophic wrinkling. This condition may remain unchanged or keratoses may be added, which develop into epitheliomas.

Drivers and coachmen, exposed to the rigors of the weather, are often the subjects of the severer forms of rosacea. The use of alcohol, however, to which many of these people are addicted, cannot be wholly ignored as a contributing etiologic factor.

Callings dealing with dead or live animals or their products favor the development of infectious diseases. Owing to the prevalence of pyogenic organisms, local pus infections, as boils, carbuncles, impetigo contagiosa or cellulitis, are not infrequently encountered in butchers, slaughter-house men and other individuals who handle dead animal matter. A generalized bullous dermatitis with severe constitutional symptoms and a high mortality has, also, been observed. The starting point is usually an infected wound. Several years ago Bowen pointed to a possible relationship between these cases of so-called acute infectious pemphigus and foot-and-mouth disease of cattle, as he had observed such instances during an epidemic of the latter disease in New

England. Foot-and-mouth disease takes places by inoculation of the skin or mucous membrane in butchers, dairymen, stable boys and drivers. Herxheimer records having seen a case in a horse-dealer.

The parasitic diseases which are more definitely identified with particular vocations are tuberculosis, anthrax, glanders and actinomycosis.

Inoculation tuberculosis occurs in its simplest form as verruca necrogenica, or anatomic tubercle. It is encountered chiefly among medical students, physicians, hospital ward attendants, and butchers, as a localized papillomatous formation usually about the knuckles or other parts of the hand or forearm.

Anthrax is uncommon in this country, but it is prevalent in animals in certain parts of Europe and Asia, especially cattle and sheep. In man the disease occurs as the result of direct infection from such animals or their products via the skin, the intestines or, more rarely, the lungs. It is seen in the wool-sorting, wool-combing and spinning industries, horse-hair and brush factories, in stevedores, wharf-laborers, carters, farmers, shepherds, butchers, meat inspectors and cattle salesmen. The internal form is known as wool-sorters' disease. Of the external, which is, also, the more usual, there are two varieties, the malignant pustule and malignant anthrax edema, the latter being the more fatal of the two.

Glanders, usually contracted from horses, is seen almost exclusively in hostlers or those who have to do with these animals. It is rare in this country. The bacillus may gain entrance through the mucous membrane of the eye, nose, mouth or respiratory tract, or the site of inoculation may be a lesion of the skin. Clinically, the disease is divided into glanders and farcy, according to whether the lesions of the skin or mucous membrane predominate. Both types present an acute and a chronic form.

Actinomycosis is endemic in cattle and more rarely affects horses, hogs and other animals. In man the disease is seen in those who come in contact with such animals or handle fodder or grain, as farmers, coachmen, dairymen, millers, etc. Infection in man takes

place through a carious tooth or lesion in the mouth and less often through the skin. The ray fungus is believed to flourish on corn, hay and cereal grains, as the latter have frequently formed the nucleus of an actinomycotic lesion.

Erysipeloid, an infection of the skin caused by poisoning from meats, fish, poultry, cheese and similar animal products, is seen chiefly in butchers, fishmongers, poultry-dealers, cooks and scullions. Gilchrist observes that crab bites and injury by crabs are a frequent cause. The disease, according to Rosenbach, is caused by *Cladothrix*. It is characterized by one or more areas of slowly spreading inflammation, clearing up at the part originally affected and progressing slowly to new areas, the advancing border being festooned or scalloped. Burning, pricking or itching sensations accompany the affection, which involves chiefly the fingers and hands.

Among the minor infections may be mentioned ringworm transmitted from horses, dogs and other domestic animals to men and boys employed about stables or engaged in the care of such diseased animals. Ringworm of equine origin is characterized by the formation of irregular and projecting nodular lesions studded with pustules, involving the beard region, neck, wrist or hands.

In certain grain regions infested by a mite, *Pediculoides ventricosus*, an intensely itching urticarial eruption is endemic among the farmers and laborers who handle sacks of wheat, barley and other grains or straw harboring this parasite. Small epidemics have appeared also at different times from the use of mattresses made from straw which the organism has made its habitat.

**Eczema.** Among the most frequent of the internal causes of eczema, according to A. S. Clarke,[2] are:

Prolonged administration of certain drugs, *i. e.*, arsenic, the bromides, iodides, etc. Also the use of alcohol, tobacco, tea and coffee.

Excessive eating of meats, particularly fried and salt meats and those of the higher protein content, *i. e.*, liver, sweetbreads, kidney, etc. Individuals often have a sus-

(2) N. Y. Med. Jour., Sept. 13, 1913.

PLATE III.

Sporotrichosis.—*Dr. H. C. Sumney's patient.*

PLATE IV.

Vesicular dermatitis of plant origin.—*Dr. P. F. Shaffner's patient.*

ceptibility to untoward effects from some particular meat, and don't let us forget that it is sometimes one of the so-called white meats too. A safe rule is never to take meat of any kind more than once a day.

Sweets in excess, and especially cooked sweets, such as pastries, pies, cakes, candies, and sweet desserts may cause eczema. A patchy eczema occurs around the mouths of boys and girls, with a more or less constant history of excessive candy eating.

Eczema in fat babies (and here is where it usually occurs) can often be permanently relieved only by lowering the fat content in the feedings, or even putting the baby on a fat-free milk until a well-marked improvement is established. Any article of diet producing gastric or intestinal indigestion, whether from a personal idiosyncrasy or from its method of preparation, as very rich or fried dishes, predisposes to eczema in people whose skins are inclined that way. Overwork and worry are frequent causes, as evidenced by the anal and scrotal eczemas of many of our men of affairs. A chronic congestion in any part of our skins, but particularly that of the extremities, makes us susceptible, as in heart disease, thickening of the arteries, and varicose veins. Constipation, the gouty and uric acid diathesis, diabetes, organic and functional kidney disturbances, torpidity of the liver, and the other metabolic disturbances less well-known and depending on the activity of the internal glands are too frequently the cause of an attack or a recurrence of an old eczema. The menopause often marks the first appearance of an eczema, and some women have eczema throughout their pregnancies. The menstrual period is often the time when eczema patients will be most annoyed, and this is particularly true if there are menstrual difficulties present. There is quite a characteristic papular eczema in young children and chlorotic girls.

**Eczemiform Psoriasis.**[3] A psoriasis may, if overstimulated, come to look like an eczema, *i. e.*, it may present the phenomena of weeping and crust formation, the

(3) Urolog. and Cutan. Rev., June, 1913.

character of the latter being essentially different from that of uncomplicated psoriasis.

**Sporotrichosis.** In view of the great number of cases of sporotrichosis which are being reported from all over the world, and of late in all parts of the United States, perhaps particularly the country regions, the following summary of the present status of the disease by Paul Cappani[4] is of importance. The *Sporotrichon* belongs to the *fungi imperfecti,* and is somewhat distantly related to the actinomyces. Various species of this genus are pathogenic for man, and they are usually named after their discoverers, as, for instance, *Sporotrichon Schenckii,* 1898; De Beurmanni, 1903; Dori, 1906; Janselmei, 1910, and Gougerot, 1910. Cappani thus recognizes the priority of Schenck, which was at first disputed by the French. As to the identity of these different species, the last word has not been said. By far the most frequent form is the *Sporotrichon De Beurmanni.* This organism appears as a network of long, fine, branching threads, on which cling oval or round pigmented spores. A few such spores lie also irregularly distributed between the threads. Its macroscopic appearance is characteristic on the culture medium recommended by Sabouraud, the composition of which is: tap water, 1,000 gm.; peptone, 10 gm.; raw glucose, 40 gm.; gelose, 18 gm.

On this medium small grayish-white colonies develop as points with a brighter circular radiating zone surrounding them. They develop on the third or fourth day at 37° C., or at the end of a week at 15° C. They are completely pathognomonic and in the course of the ensuing week undergo a great increase in size and become round and prominent and more or less split up. To see a characteristic culture of sporotrichon once is to recognize it always.

The occurrence of sporotrichon as a saprophyte in nature was described and demonstrated in 1908 by Gougerot, who found it in the French Alps growing in the bark of beech trees and on oaks. It also grows on

(4) Corresp. f. Schweiz. Aerzte, Oct. 11, 1913.

thorn bushes, both on the wood and on the foliage, and occurs in garden earth, on various fruits, vegetables, greens, and in water and in wine. The organism also is found on certain living insects, such as flies, wasps and ants. Various animals may show an affection similar to that in man, namely, horses, dogs, rats and mules. The sporotrichon sometimes exists as a saprophyte also in healthy human individuals, on the mucous membrane of the pharynx and of the alimentary tract.

Man may, therefore, be infected by various routes: Through punctures, abrasions and injuries from wood, bark, and the like; through earth getting into unclean wounds; by uncooked fruits, vegetables and salads; by drinks of various kinds; through inoculation by insects and contagion from domestic animals; by contagion from man to man.

Symptomatology: When the organism enters man not by way of the gut but through the skin a lesion is formed at the point of entrance known as the primary lesion, a sporotrichotic chancre. From here the disease progresses by way of the blood and lymph channels and may attack the lymph glands, mucous membranes, bone, synovia, tendons, joints, muscle, the eyes, the breast, and all the internal organs. In each locality it may produce a great variety of lesions. These lesions are principally of a nodular type, simulating tuberculosis, syphilis, or a pus infection. The general condition usually remains good in spite of very marked emaciation.

Sporotrichosis cases may be divided, according to their symptomatology, into three different classes:

I. *Sporotrichosis with disseminated gummata:*

1. Non-ulcerative form: Indolent elastic indurated nodules, from 20 to 30 mm. in diameter, develop in the hypoderm, irregularly distributed over the body. Their number is always considerable, usually from fifty to a hundred. The time of development averages from 4 to 6 weeks, and at the end of this time central softening is noticeable. At this stage development suddenly stops; the expected ulceration does not occur, or occurs only on a few gummata. The individual gummata appear

not simultaneously but one after the other; they all, however, go through the same stages of development. In the rare cases in which fluctuation develops the abscesses are cold.

2. Ulcerative form: The development of the gummata is just the same as in the non-ulcerative form. Development, however, does not stop at the end of from four to six weeks, as in the non-ulcerative form, but fluctuation develops and ulceration occurs. The appearance of the individual ulcer may be various: Tuberculoid, syphiliform, ecthymatiform, furuncular or polymorphous. These different forms may all occur simultaneously in the same patient.

3. Form with large multiple abscesses: This is a rare form which sometimes imitates spina ventosa, or large tuberculous gravitating abscesses.

II. *Localized sporotrichosis:* At the point of entrance of the organism there arises the sporotrichotic chancre in the form of a deep gummatous ulceration or a large acne pustule. A lymphangitic line runs out from this chancre and along this line occur indolent gummata which resemble the gummata of the disseminated form. The picture produced is very characteristic, the large gummata lying along the lymphatic thread like so many beads. Occasionally the regional glands of the chancre are affected, sporotrichotic adenitis. Any one member of this trinity, chancre, lymphangitis or adenitis, may occasionally be absent. This localized sporotrichosis occurs with predilection on the head and extremities.

III. *Extracutaneous forms:* It has already been mentioned that sporotrichosis in some cases may affect all the internal organs or nearly all. Usually this form occurs simultaneously with the gummatous affection of the skin. The histologic and clinical studies of this constitutional disease, which shows great polymorphism in its manifestations, have not yet been completed. Previously such cases probably always have been diagnosed syphilis or tuberculosis. Practically no work has been done yet on sporotrichosis as an occupational disease.

Development: The development of sporotrichosis is

in most cases very chronic, seldom acute. The time of incubation varies between twenty days and three months. The eruption sometimes is extremely stormy, but more often slow and usually without fever. Marked emaciation is the rule, in marked contrast with the emaciation is the good general condition. Occasionally cachexia and death ensue. With proper treatment cure results usually in from 3 to 12 weeks. If the disease is not properly treated it runs a chronic course from year to year. Spontaneous recovery is the exception. In the rat hereditary or congenital sporotrichosis can be produced experimentally. In man it has hitherto not been observed. There is no acquired immunity.

Clinical diagnosis: The differentiation which is most difficult is from syphilis and tuberculosis. The following points should be considered:

1. Non-ulcerative syphilitic gummata.

The number of sporotrichotic gummata not infrequently runs from fifty to one hundred. Non-ulcerative syphilitic gummata are very rarely more numerous than five. Sporotrichotic gummata appear one after the other, and therefore are of different age. There is no topographic systematization on the limbs. After a relatively rapid development through the stages of induration and central softening, further development stops. There is no tendency to ulceration. The softening remains central. At the border of the lesion there persists a hard ring. The skin over the gummata does not become edematous. It scarcely even becomes rose-red or adherent. It does not become thin. The contents are thick, serous or purulent. There is never a plug. The diagnosis in these cases is usually easy.

2. Ulcerative syphilitic gummata.

In this form the clinical diagnosis is much more difficult, but nevertheless it is usually possible. The lesion resembles an ecthyma syphiliticum. The number of the gummata plays here no characteristic rôle. Often only the central part is softened, and a hard peripheral ring remains. The form of the ulcer is irregularly toothed, not sharply punched out. While the first ulcers of such an eruption may resemble those of syphilitic

origin, yet those lesions following may be tuberculoid, ecthymatiform, furuncular or even trichophytoid. Thus there arises a very polymorphous picture, which should always arouse suspicion of sporotrichosis. Not infrequently auto-inoculation from the pus of the ulcers takes place in the surrounding skin. There then develops a number of small ecthyma-like pustules.

3. Tuberculosis.

The multiplicity of the ulcers helps here in the diagnosis especially when the number exceeds thirty and the general condition nevertheless remains good. The indolence of the lesions in sporotrichosis is very marked, and the general condition of the patient is much better than in tuberculosis. The De Beurmann test, the great variety in appearance of the skin lesions and the superficial and central softening appear to be the most characteristic features of sporotrichosis. In tuberculosis the cold abscesses correspond to existing disease of the bones or joints. This is not so in sporotrichosis. In this latter disease the cold abscesses develop simultaneously with the gummata and usually more rapidly than the latter. In extracutaneous sporotrichosis diagnosis is more easily possible when skin lesions also are present.

To complete the diagnosis cultures are necessary and are easy to make. An elaborate bacteriologic outfit is not needed. With a Pravaz syringe the contents are removed from a non-ulcerative gumma, and are smeared over Sabouraud's medium. The test-tube is then sealed for eight days, and allowed to stand at room temperature. At the end of this time the characteristic growth appears. Microscopic examination is almost unnecessary.

Serum Diagnosis: For immediate diagnosis the so-called sporo-agglutination of Widal and Abrami is useful. The principle is the same as in the agglutination of typhoid bacilli with typhoid serum. Other mycoses, such as actinomyces and diskomyces, also agglutinate, but not so intensively. The complement deviation test has also been used for sporotrichosis in much the same way as the Wassermann test for syphilis. As the anti-

gen a culture of the sporotrichon is used. The reaction is positive in all cases of sporotrichosis, but also in actinomycosis and diskomycosis. In other affections it is always negative. The tuberculosis reaction of von Pirquet has its analogue in the skin reaction of sporotrichosis. This reaction is carried out according to the method of Mantoux by the injection of sporotrichosin into the skin. The reaction is stated by its author to be reliable.

Treatment: It has already been stated how chronic and unsatisfactory is the course of sporotrichosis without treatment. In iodine we have, however, a drug which brings about a cure in a few weeks, even in the severest cases of sporotrichosis. This fact has led probably frequently to confusing it with syphilis. In the St. Louis Hospital, Paris, from 2 to 4 gm. of iodide of potash are given daily. In the case of total iodine intolerance, the prognosis is serious. The ulcers are painted with a 2 per cent. iodide of potash solution. De Beurmann states that cure results by the destruction of the parasite by the macrophages. Iodine activates macrophagocytosis. While some little work at present is being done on the serum therapy of the disease, nothing very definite or final has yet been published.

**Neuroma Cutis,** according to M. L. Heidingsfeld[5], implies some form of new growth in the skin, multiple or single, variously sized, situated intimately in the skin, and containing new nerve elements. An important clinical feature in the cases thus far described is that they are the seat of very severe paroxysmal pain, of both spontaneous and secondary character. All subcutaneous nodules, whether painful or painless, springing from amputated nerves or what not, the so-called false neuroma of Virchow, and the subcutaneous nodules of Wood, together with the so-called "neurofibromas" of Recklinghausen, painless embryonic connective tissue new growths of the skin, credited with springing from the medullated sheaths of subcutaneous nerves, are for obvious reasons not to be considered with an affection

(5) Jour. Amer. Med. Assoc., Aug. 9, 1913.

which deals with new nerve elements, a new growth which has its origin, development and location in the true skin.

Cutaneous neuromas bear a close and deceptive clinical resemblance to myoma cutis, and the microscope must be relied on to effect the differentiation. Heidingsfeld's case of neuroma preserved the greatest possible resemblance in point of clinical appearance, chronicity, nature and character of onset, development and symptomatology, to his previously reported case of myoma cutis.

Fourteen cases of well-defined myoma cutis have thus far been recorded in the literature. Pain, of a severe lancinating character, spontaneously paroxysmal or easily induced, was associated in nine of the cases, and was absent in the remaining five. In some of the cases nerve abnormalities were noted, but in the vast majority no such observations were made, possibly because of the technical omissions in this special direction. Verneuil reports a dissecting-room case of myomata cutis in which nerve fibers were present in such abundance that the diagnosis of neuroma could be entertained almost as well as that of myoma.

The diagnosis of myoma must be considered well grounded if there has been a preponderating proliferation of well-defined involuntary muscular fibers; but this finding in and of itself fails to explain why slightly less than two-thirds of the cases present clinical characteristics in the form of severe paroxysmal pain, spontaneous or easily induced in character, whereas slightly more than a third of the cases are free from all special symptoms. It also fails to explain why some of the cases show an abnormal proliferation of nerve elements, and others no special change. The explanation that the pain is due to mechanical pressure of the growth on the surrounding nerve endings, scarcely suffices; otherwise all growths in the cutis would give rise to similar symptoms.

The pathologic proliferation of involuntary muscular fibers in the true skin is unquestionably noteworthy. It is not an incident of very exceptional character. Heid-

ingafeld has observed, for instance, marked proliferation of involuntary arrectores pilorum in some of the chronic dermatoses which are attended with persistent creepy and chilly sensations, notably pityriasis rubra pilaris. It is evident that this tissue can readily undergo a very material compensatory hypertrophy, the presence of which can readily be considered an effect rather than a cause. If this is true, no cutaneous abnormality would in all probability, be more conducive to involuntary muscle fiber proliferation than a neuroma, with its attendant intolerable paroxysmal attacks. It is, therefore, obvious that some of the cases of myomas can, on clinical as well as on pathologic grounds, be considered to be neuromas rather than myomas. Simple myoma cutis can be diagnosed readily by the absence from the growth of specialized structures, hair, follicles, glands, etc., as well as by the presence of involuntary muscle fibers. At all events, all excessively, persistently painful lesions of the skin, in which the pain is of a severe, lancinating, spontaneously paroxysmal or easily induced character, warrant a careful microscopic examination for nerve fibers, and their presence in abnormal amount justifies, in my opinion, irrespective of other findings, the diagnosis of neuroma cutis. The cases doubtless justify further differentiation into neuromyoma, neuroendothelioma, or neurolymphangioma, in conformity with the preponderating associated pathologic tissue.

**Calcification of Subcutaneous Tissues.** T. P. Weber[6] reports the case of a seven-year-old girl who had a large number of hard nodules in the subcutaneous tissue of the extremities. Most of the nodules were smaller than an average pea, but some of them, especially those on the buttocks and about the knees, were much larger, the larger nodules having apparently arisen by the coalescence of several smaller nodules. The face, head, thorax and abdomen were practically free. On the child's admission to the hospital the skin over one of the nodules was ulcerated, and the skin was inflamed and adherent over one or two others; but the nodules, as a rule, gave

(6) Brit. Jour. Child. Dis., March, 1913.

rise to no pain or tenderness, and seemed to have developed without the child being aware of their existence. The lymph-nodes in the groins and right axilla, and some in the neck, were moderately enlarged. The liver and spleen could not be felt, and the child seemed to be free from visceral disease. The urine contained no albumin or sugar. There was no fever. The presence of hard subcutaneous nodules was first noticed twelve months before the patient's admission to the hospital, and since these were detected many others had appeared. One little nodule near the right knee became very prominent and discharged spontaneously six weeks before admission. In regard to the patient's past history, she is said to have been subject to skin eruptions, but the chief point is that in November, 1909, she was under treatment at a fever hospital for scarlet fever, and from that time to August, 1910, she suffered successively from diphtheria paresis of the lower extremities (diphtheria paralysis?), a skin eruption somewhat resembling lichen ruber, pneumonia, an abscess at the back of the neck, a corneal ulcer (marantic) of the left eye, and left-sided otorrhea. The corneal ulcer perforated, giving rise to considerable prolapse of the iris, but ultimately healed up again. During the latter period of this succession of illnesses the patient was in the hospital. She left the hospital on August 1, 1910, but was readmitted in September of the same year for temporary fever of uncertain origin. Since that time the subcutaneous nodules appeared and first attracted the parents' attention about August, 1911. That the subcutaneous nodules consist largely of calcareous material has been proved both by *x*-ray examination and by chemical analysis. The nodules occasionally become inflamed and softened, the skin over them becomes adherent, and, if left to themselves, they would discharge this purulent matter mixed with calcareous debris.

JAN 10 1913

## THERAPEUTICS OF THE DERMATOSES.

**Hygiene of the Skin.** D. O. Robinson[7] concludes that the use of ointments, so-called skin foods, and chemical depilatories for cosmetic purposes should be avoided.

The natural complexion resulting from correct diet, regular hours, rest, the use of a neutral soap, and the avoidance of all foods and drinks that cause indigestion and lead to toxemias and disturbance of the nutrition of the skin, is preferable to all artificial ones, and prevents the premature old age condition of the skin. When the condition of the skin depends upon the abnormal action of some other organ or organs of the body, a competent physician should be consulted.

For the normal nutrition of any tissue or organ of the body there must be a normal amount of healthy blood passing through the part, nourishing it in a given unit of time, and the tissue itself must not be acted upon by injurious agents from any direction, within or without. The statements contained in this paper are based upon this fundamental fact, and a due appreciation of its correctness must be the guidance in matters concerning hygiene of the skin.

**Diet in Skin Affections.** Huebner[8] states that there is no doubt that quite a number of cutaneous diseases can be favorably influenced by a properly regulated diet, although diet alone in most skin diseases is not able to bring them to a favorable termination. Particularly favorable for dietetic treatment are those skin diseases which occur as the external symptoms of internal affections, as, for instance, the itching in diseases of the liver, or furunculosis in diabetes, and the like, for here the dietetic treatment is only part of the principal treatment—that of the underlying disease.

(7) N. Y. Med. Jour., Sept. 13, 1913.
(8) Med. Klinik, 1913, No. 11.

The skin diseases of infancy are closely related to diet. The reduction of the diet in an over-nourished eczematous infant is a very useful aid to local therapy. Of most importance is the diminution of fat in the diet; therefore, cow's milk is well replaced by whey or buttermilk. Fruit juices may also be added to regulate the bowels. Finkelstein states that salt should be witheld in eczema of children; but Huebner does not agree with him. Most certainly internal therapy should go hand in hand with local treatment. The so-called "fatal eczemas as the result of too rapid healing in consequence of external therapy" belong purely to the realm of fable, according to Huebner. Strophulus infantum is another dermatosis of infancy which is improved by regulation of diet. The bowels must be kept open by the same means as in infantile eczema. In urticaria, especially in that form which appears only on taking certain articles of diet, the dependency of the lesion on the diet is thoroughly undeniable. Not so certain, however, is the connection between diet and acne, although here the avoidance of certain articles of diet, especially of fatty articles, and drinks, such as coffee, tea and alcoholics, certainly exerts a favorable influence. In eczema of the anus the ingestion of strongly seasoned articles of diet has an unfavorable influence on the disease, since these irritating spices are not digested and are discharged intact with the stools, and therefore irritate the anal skin.

**Treatment of Facial Erythema.**[9] There are many forms of erythema affecting the face. Some are transient and due to lack of vaso-motor control, as morbid blushing from emotion, the presence of the opposite sex, etc. One very common type is the blush seen after the ingestion of hot liquids or stimulants, such as coffee, tea, and alcohol. This variety is obviously connected with the gastric function and is, in fact, the mildest degree of rosacea. These types are usually controlled by vaso-motor tonics, as ichthyol in from two or three minim doses in pill form, taken after meals. The distressing

(9) Urolog. and Cutan. Rev., September, 1913.

condition known as "red-nose," in which the erythema affects only the tip of the nose, is one which patients' friends are apt to attribute to intemperance—an unfortunate supposition, for it not infrequently occurs in people who never indulge in alcoholic beverages. Such cases may improve with ichthyol; but adrenalin, locally applied, may control the condition for a time and enable a society belle to attend an evening function in comparative mental ease. The erythema resulting from exposure to the sun's rays is peculiar in that it is often accompanied by pigment changes. A certain number of these cases become eczematous and, in common with nearly all erythemata, are followed by slight desquamation. Protection from the actinic rays of the sun is a *sine qua non* in the treatment, and lotions of lead (Goulard water), or calamine, with or without the admixture of cow's milk, are indicated for local application. A rarer form of facial erythema is that of a more or less persistent type, limited to the sides of the face, usually symmetrical, and, in some cases, congenital. These cases must be distinguished from the mild cases of vascular nævus; in the former case there is simply a chronic, passive congestion. This type is difficult to influence by ordinary means. Other cases of this kind are associated with seborrhea capitis, acne vulgaris, and with a certain amount of insufficiency of vascular tone. It is in this group of cases, especially when accompanied by teleangiectases, that Lucien Jacquet and Delat have suggested a mode of treatment known as the "bio-kinetic method," which consists, in brief, of a series of organized movements of the facial and nuchal muscles—in other words, a system of cephalic gymnastics which may or may not be combined with massage. Each anatomic group of muscles is exercised separately, deliberately and systematically for a measured period, great care being taken to avoid undue fatigue. After a few weeks of this treatment there is generally a considerable improvement noticed in the vascular tone. The method is a reasonable one, for it is founded upon anatomic and physiologic principles. It is useful in many varieties of subacute and chronic affections of the skin of the

face. One other variety of erythema may be mentioned, namely, that which is the first stage of a lupus erythematosus (ulerythema). This may be recognized from the early appearanec of fine scaliness, by its tendency to symmetry, and the presence of a slight degree of atrophy in the center. A few applications of frozen carbon dioxide are very beneficial in such conditions, both in the early and later stages of the disease.

**Measles and the Mouth.** J. R. R. Trist[10] remarks that despite the number of deaths from measles, and of the more serious light in which it has come to be regarded by medical men to-day, lay tradition for the most part looks upon measles as a trifling disorder. And one cannot but be struck by the simultaneous occurrence in every epidemic of cases presenting, on the one hand, an illness of the most trifling character, and upon the other a condition placing the patient in grave danger of his life.

Necropsy always reveals one or more pathogenic microörganisms, not, indeed, constant in variety, but notably the pneumococcus, the streptococcus, and the *Staphylococcus pyogenes aureus.* The disease is a condition in which certain tissues (notably mucous surfaces such as of the respiratory and alimentary tracts) are so affected as to render them unduly susceptible to the mischief which these organisms are able to bring about; and that herein lies the danger of the disease. The first point of entry of these microörganisms is the mouth. Every case of measles with severe complications (whether of broncho-pneumonia or diarrhea) has presented a mouth of exceeding foulness. Since adoption of routine cleansing of the mouth, no case brought under treatment within twenty-four hours of the appearance of the rash has had a fatal termination.

The treatment adopted is simply to order the mother or nurse to wipe out the mouth carefully but gently every four hours with a piece of clean boiled rag or lint dipped in borax or thymo-glycerine; attention is directed not only to the tongue and roof of the mouth, but espe-

(10) British Med. Jour., Sept. 9, 1913.

cially to the inside of the cheeks and labial surface of the gums.

**Untoward Effects of Hair Dyes.** J. S. Fernandez[1] points out that the hair dyes in use at the present time are more or less toxic and may give rise, under certain circumstances, to general and local troubles. The injurious effects experienced are of two classes, inflammatory and toxic, although both may be present at the same time. The trouble may be limited to the eyes, or it may affect the general system also from the start. The dyes which do the most harm are those most generally used, as they are very easily prepared. Fortunately, as the aniline derivatives are powerful colorants, a smaller quantity of the dye is necessary to produce the desired results, and there is, therefore, less danger to the eyes and the general health. The irritant action of many of the hair dyes gives rise to the formation of vesicles on the scalp, the dried fluid from which produces crusts and causes the hair to fall out in tufts. This condition is accompanied by intense itching of the scalp; general indisposition and lowness of spirits, followed by vertigo, slight renal disturbances are frequently seen, and sometimes albuminuria, or even uremia. Cephalalgia, sleeplessness, dyspnea, delirium, arrhythmia, and vomiting may occur, and there is almost always edema of the face and eyelids. The ocular disturbances may at times be the only sign of poisoning and they may occur without pruritus of other skin disorders. The skin is the portal of absorption, because the irritation of the skin and the accompanying vesicles make the process of absorption easier. In most cases the effects are due to the nature of the coloring substance and the susceptibility of the user. The edema extends to the eyelids and is followed by chemosis, but the vision is not impaired and the fundus is not affected. As soon as the edema subsides the patients get well. Fermandez divides hair dyes into four classes: 1. Decolorizing (hydrogen peroxide); 2. vegetable tinctures (less frequently used); 3, tinctures with a metal

(1) Amer. Jour. Derm., December, 1913.

base in common use, and including caustic potash, nitrates of silver and mercury, bismuth, acetates of lead and copper, nitric and sulphuric acids, and sodium hyposulphite; 4. tinctures based on aniline derivatives; most of the modern hair dyes belong to this class.

**Sulphur in Acne.** A. W. Brayton[2] points out that in acne vulgaris or rosacea precipitated sulphur, mixed in the ratio of 1 to 4 with any ordinary face powder the patient wishes to use, forms a useful dry application. At night the following lotion may be applied:

℞

Zinci sulphatis...
Potassii Sulphidi. } .....āā 3ii
Aquae rosae.....℥xii

Fiat lotio secundum artem. Sig.: Shake well before applying.

Precipitated sulphur may also be used in ointment of rose, in the ratio of one drachm to one ounce (4 to 32 gm.). Sulphur treatment may be continued as long as desired. By scraping off blackheads after washing with soap and hot water, by opening pustules freely with a sharp knife, and by vigorous rubbing with a brush or coarse towel at night before applying the lotion, ordinary acne may be kept under control or even cured.

In the treatment of dandruff and seborrheic dermatitis of the scalp, the latter should be cleansed once a week with tar soap, the lather washed out with water and when the scalp is dry, a portion of the size of the end of the thumb of the following cream well rubbed into the scalp with the finger tips:

℞

Sulphuris praecipitati ..... 3i
Acidi salicylici .....3ss
Unguenti aquae rosae..... 3i
M. Ft. unguentum.

This ointment may, also be used for seborrheic dermatitis of the face or of the entire body. White pre-

(2) Indianapolis Med. Jour., February, 1913.

cipitate ointment may be used instead for the limbs and trunk.

The following preparation is very efficient as a keratolytic and destroyer of dandruff:

℞

| | |
|---|---|
| Hydrargyri chloridi corrosivi | gr. vi |
| Acidi salicylici | ʒss |
| Aquae rosae | ʒii |
| Alcoholis | ℥vi |

M. Ft. lotio.

To each 8 oz. of this combination there may be added from one-half to one drachm (from 2 to 4 gm.) of castor oil or of glycerine. Resorcinol in from 1 to 3 per cent. strength may, also, be substituted for the corrosive sublimate. Half an ounce of the preparation should be rubbed into the scalp with the fingers every morning.

In scabies sulphur powder is an effective remedy. The parts should first be washed with sand soap, a brush being used to break up the burrows of the itch mite, a small teaspoonful of the washed flowers of sulphur or of precipitated sulphur dusted over the entire body and then rubbed in. In the case of a child a half teaspoonful of sulphur may be sprinkled in the nightgown or between the sheets at bedtime every other night, and the underwear changed two or three times a week only. By this method no ointment is necessary, and sulphur dermatitis is avoided. One may, however, rub between the fingers, on the elbows and knees and about the genitals a little of the sulphur cream.

**Xylol in Pediculosis** is recommended by M. E. Bodin[3]. The remedy was first employed by Sabouraud and it acts most energetically, penetrating and dissolving the chitinous covering of the nits and causing the rapid death of the insect. When applied to sound skin, xylol causes only a slight sensation of itching, but upon a diseased or inflamed surface it is somewhat painful. Bodin recommended diluting the xylol thus:

(3) Urolog. and Cutan. Rev., October, 1913.

℞

Xylol pur. ..... 50.0 gm.
Alcohol,
Ether, āā..... 25.0 gm.

A single application of this lotion, dabbed on the affected parts is generally sufficient for a cure.

An ointment with from one or two drops of xylol in 1 gm. of vaseline is also effective for rubbing in after washing with soap and water. The treatment is cleanly and superior to the classic method of inunction with mercurial ointment for destroying the pubic louse. The extreme inflammability of the xylol-alcohol-ether mixture should be remembered and a caution given in this respect when dealing with ignorant or careless people. It is unnecessary, in the vast majority of cases, to cut the hair on the head in women, and this drastic procedure should be adopted only when the infection is very severe and of long standing, as in cases of plica polonica. Children's hair may nearly always be cut short, as the regrowth is rapid. In the case of pediculosis corporis care must be taken adequately to disinfect the clothes, for the parasites infect the body linen.

**Treatment of Leg Ulcer.** In an encyclopedic article Williams[4] goes into the present, past and future treatment for leg ulcers and all their different varieties. After trying out many of these remedies he has come to the conclusion that the following routine gives the best results: First apply anesthesin to the ulcer. Douche well with a suspension of terebene in water. This is a good deodorizer and relieves a sickening duty of its offensiveness. Rub down the surface of the ulcer with rags soaked in lamp paraffin and cleanse the skin surrounding the ulcer with clean rags soaked in the lamp paraffin. Fill up the ulcer with iodide of starch paste and spread the same thickly on linen and bandage. Renew this dressing twice daily.

Lamp paraffin is a very valuable cleanser of old crusts and scales and dried ointments, and the like. Saturated permanganate solution is also useful in slough-

(4) Brit. Med. Jour., Oct. 18, 1913, p. 1013.

ing ulcers. The most useful general application for all kinds of leg ulcers—inflamed, weak, sloughing, callous, irritable, gummatous and tuberculous—is an iodide of starch paste. Tilbury Fox was the first to recommend it for venereal ulcers. While it soothes many patients, yet it causes considerable irritation in others. In the formulae usually given it is too strong. The formula which Williams uses is starch, 10.5 gm.; glycerine, 20 gm.; water, 60 gm. Boil, and when nearly cold add liquor iodine (British Pharmacopeia, 1885), 5 gm. This starch iodine paste is applied very thickly to the ulcer, so as to overlap well the edges. A bandage is then applied. If there is much discharge this dressing should be renewed twice daily; later once daily or even less frequently. Nearly all cases do well. The pain is lessened or completely relieved in a few days; the hard borders of the ulcer soften, the surface is cleansed, granulations form with little discharge and are not irritated. The few cases which it does not suit are those with an idiosyncrasy to any form of iodine, intensely inflamed ulcers, irritable ulcers about the malleolus in neurotic women, and weak ulcers with very profuse discharge. In the latter class it sometimes liquefies inconveniently, and therefore requires frequent changing. With pancreatic ferment Williams has had but little success, even in chronic cases; *x*-rays, he believes, are of no use. Zinc ionization does some good after a callous ulcer has been cleansed, but the treatment is painful.

Tuberculous ulcers and Bazin's disease yield to potassium permanganate solution, one dram to the ounce, followed by iodide of starch paste. The use of drugs which stimulate epithelial growth on granulating ulcers is rather difficult in out-patient practice. Williams has had no experience with allantoin. The 8 per cent. scarlet red ointment, even when scrupulous care in directions is given the patient, was too strong, and Williams substituted the 5 per cent. ointment. The following experiment which Williams performed is interesting: He covered half a healing ulcer with carefully shaped lint with 5 per cent. scarlet red, the other half with 5

per cent. amido-azotoluol. In twenty-four hours the scarlet red half was inflamed and painful, the amido half showed no inflammatory symptoms. This is practically an epitome of Williams' experience with these drugs. He has now replaced them both by 2 per cent. pellidol, and as far as a limited trial is concerned he believes it to be more useful for out-patient work.

**Exfoliative Dermatitis.** E. A. Molesworth and A. Verge[5] report the case of a man, aged twenty-five years, who suffered from psoriasis from childhood. In 1910, after a severe course of chrysarobin treatment, the condition changed to one of exfoliative dermatitis. The entire body surface was red and covered with large, regular scales which were produced in great profusion. Four doses of salvarsan were given intravenously, but did not do as much good as thyroid extract, which was begun in doses of 2 gr. (0.12 gm.) and gradually increased up to 15 gr. (1. gm.), three times daily. This dosage was taken for a fortnight without any pulse acceleration or mental disturbance, the patient being kept in bed. The dose was later reduced to 5 gr. (.03 gm.). Locally, a zinc oxide ointment with two or three per cent. of salicylic acid was used. Marked improvement occurred, all tendency to scaling disappearing, though slight redness persisted for a time.

**Seborrheic Keratosis.** According to Montgomery and Culver,[6] where keratosis is present on a seborrheic skin in old persons, thick crusts had best be removed with the curette. Crystals of trichloracetic acid, or a saturated solution of it, should be rubbed into the open surface thus produced. Better results may be secured with the acid than with solid carbon dioxide, and the effect is as good as that obtainable with the *x*-rays. As a preliminary to employment of the crystals, they should be broken up with a few drops of water in a small dish. Cotton is then wrapped around the end of a probe, allowed to take up the acid and applied with rubbing, to the involved area. To arrest the action of the acid,

(5) Australian Med. Gaz., No. 8, 1912.
(6) Jour. Cutan. Dis., October, 1912.

when necessary, water can be mopped on the lesion. The acid should, however, be left on until the surface has become white, i. e., for a few minutes.

**Disseminated Keratosis Blenorrhagica.** Gonerot and Meaux St. Marc,[7] report a case. The patient, a man of 24, contracted gonorrhea in the middle of May, 1912. At the beginning of June he showed signs of gonorrheal arthritis. In the following month keratotic lesions began to appear upon the palms and soles, consisting of numerous small and horny papules. The dorsal surface of the toes was affected and the nails of both hands and feet were striated and thickened. The toe nails were just ready to fall out. The localization of the eruption was strictly symmetrical. The posterior aspects of the elbows and the left arm were also affected. The appearance upon the soles exactly corresponded to the classical description of the "raised map." The urine contained a trace of albumin. Gonococci were sought for in the horny lesions, but were not found. Aspirin was administered for the relief of the joint-pains, and urotropin to render the urinary tract aseptic. The latter drug has been used in other cases of keratosis blenorrhagica with great benefit, and in the present instance it worked wonders. In a fortnight the horny papules had disappeared, with the exception of a few upon the soles and palms. Local treatment had but little effect upon the lesions. On Sept. 2, 1912, the patient left the hospital at his own request, very much better, but not completely cured. This case is instructive as showing the importance of treatment of the original infection of the genito-urinary passages as a means of curing the cutaneous lesions, and that the best drug for this purpose appears to be urotropin.

**Ointment of Ammoniated Mercury** is one of the most valuable external remedies at the disposal of the dermatologist. For impetigo contagiosa it has no equal, and, as a rule, it may be used in full strength, except in the case of very young infants, or where the lesions are spread over a large area of the body. D. W. Mont-

(7) Ann. des Malad. Ven., No. 11, 1912.

gomery[8] points out that much of its effectiveness as a therapeutic agent depends upon the normal sensitiveness of the skin to this drug. Instances of idiosyncrasy to mercury are well known, and even the white precipitate ointment prescribed for psoriasis or seborrhea, has been known to produce a severe dermatitis. In certain cases where the skin is already over-stimulated, it may be of advantage to dilute the official 10 per cent. ointment down to three and one-third per cent. by mixing it with zinc ointment. For streptococcic paronychia, or "run round" of the nail, a good combination is boric lotion, applied as a compress, followed by the application of the above ointment. In conjunction with tar it may be employed thus in chronic eczema:

℞

Liq. carbonis detergentis.....3i
Hydrarg. ammon. pulv.....gr. xx
Lanolini, vaselini .....āā, ℥ss
M. Ft. ung.
Sig. To be rubbed in once a day.

As a substitute for chrysarobin white precipitate is a useful external remedy in psoriasis and seborrhea, both of the body and of the scalp. Ammoniated mercury, then, is a stimulant, occupying a place midway between bichloride, which is corrosive, and the monochloride of mercury (calomel), which is soothing. At the same time it is a good antiseptic and a reliable parasiticide.

**Psoriasis and Lichen Planus.** J. Balzer[9] advises the following emulsion of tar in psoriasis: Oil of cade, 50 gm. (1½ oz.); black soap, 25 gm. (6 dr.); water, 50 gm. (1½ oz.). Yolk of egg and a little fluid extract of quillaja may with advantage be added to improve the emulsion. This preparation is added to the baths given for the removal of the scales. The patient is ordered while in the bath to rub the patches for ten or fifteen minutes.

All emulsions of tar, according to Balzer's experience, are more active than ordinary tar baths. A great ad-

(8) Urolog. and Cutan. Rev., February, 1913.
(9) Amer. Jour. Derm., October, 1912.

vantage of the tar emulsion baths is that they are non-irritating. They should be administered daily. A small amount, such as 2 gm. (30 gr.), of chrysarobin may be added to the preparation, its effects being rendered somewhat milder by the tar. The patient is directed to apply petrolatum to the patches in the daytime, then take the bath, and reapply petrolatum at night. Any redness following the treatment indicates that the bath should be made weaker. Tar folliculitis is treated by the application of methylene blue. Occasionally pyrogallol to the amount of from 1 to 2 gm. (15 to 30 gr.) was added to the baths, the urine being carefully watched as a precautionary measure.

In 8 cases recently treated with the oily tar emulsion baths the itching was observed promptly to subside, and the skin was left smooth and supple. In a severe case of lichen planus with bullae the baths also gave excellent results.

**Psoriasis in Children.** A. B. Pemsler[1] advises the following treatment: The patient is given a hot bath, the body is scrubbed with soap, and as many scales as possible removed. If the lesions be not very large or numerous, he employs a 6 per cent. chrysarobin ointment. This is applied to all spots daily. A valuable method of employing this drug, so that it will not soil the clothing, is in the following prescription:

℞

| | |
|---|---|
| Chrysarobin<br>Salicylic acid ..... | āā gr. 1 |
| Ether ..... | ʒi |
| Flexible collodion, q.s. ad..... | ℥i |

M. Sig.: Apply with a camel's hair brush.

This preparation forms a coating over the lesion, which should be removed every other day and a new application made. If the lesions are more diffuse, Pemsler uses a 10 per cent. ammoniated mercury ointment, as this is less apt to produce a dermatitis. This ointment is applied daily. Care must be taken that the mercury

(1) Brit. Jour. Child. Dis., April, 1913.

is not absorbed in sufficient quantities to produce poisoning. In conjunction with these local remedies, Pemsler regulates the bowels by dram doses, morning and evening, of the aromatic fluid extract of cascara sagrada. The diet consists of easily digested food with a minimum of meat. No rare meats, spicy food, tea or coffee, are permitted. For internal medication, he gives Fowler's solution in graded doses, beginning with 1 minim, three times a day, and increasing up to a certain limit, depending upon the age of the patient.

**Quinine Intravenously in Pemphigus.** Leszczynski[2] uses Popielski's formula: quin. muriat., 1.00; natri chlorat. purissimae, 1.70; aq. destill., 200.0 c.c. 20 c.c. of this solution contains 0.10 gm. of muriate of quinine and is the initial dose used. In the 3 cases described there was used 0.5 gm., *i. e.*, 100 c.c. of the above-described solution, together with 50 c.c. of an 8.5 per cent. saline solution. In all three cases the subjective symptoms were greatly relieved after the first infusion, and in forty-eight hours over the mucous membrane lesions the epithelium was beginning to grow. As there were no symptoms of quinine intoxication he increased the dosage gradually, infusion on alternate days, up to a dose of 1 gm. Case 1 had six infusions, and left the clinic without symptoms. Case 2 was similarly relieved after nine infusions, and case 3 is still under treatment in the clinic at the time of publication and is improving after fourteen injections. Normal saline infusions alone have a therapeutic value in pemphigus; but Leszcynski maintains that his treatment has a beneficial influence on the course of the disease, as shown by the increased rate of epithelialization, the alleviation of subjective symptoms, the gain in body-weight, and the diminished frequence of new bullae.

**Dilute Sulphuric Acid in Carbuncle.** J. and R. J. Reynolds[3] have had favorable results in boils from administering internally dilute sulphuric acid B. P. in 21 to 30-minim doses, each dose diluted with 2 ounces of water, every four hours. In the case of carbuncle

(2) Berlin. klin. Wochenschr., Oct. 4, 1913.
(3) Lancet, Mar. 11, 1913.

treated by this drug in large doses (small doses are not of the slightest use), changes are observed to take place in the following order: First, within twenty-four hours the infiltrated area of tissue becomes strictly circumscribed; then the slough is observed to soften; during the next few days pus is freely discharged, and the whole affected area shrinks and healthy granulation tissue forms, filling up the cavity until the part is healed. The cicatrization takes place in a comparatively short time from the commencement of the treatment, the period varying, of course, with the size of the lesion. The only external application is a dressing of carbolized vaseline (1 in 20). In cases of streptococcus infection, such as result from abrasions, punctures by infected bone spicules, or inoculation with decomposing animal matter, the patient showing early symptoms of septicemia, a somewhat different though favorable course obtains. The high temperature is quickly reduced and the pain, swelling and malaise gradually subside, the patient progressing uninterruptedly to convalescence. When the lymphatics are inflamed and the glands enlarged and painful, these conditions in a few days also disappear.

## RADIOTHERAPY AND ACTINOTHERAPY.

**Electrotherapy in Skin and Mucous Membrane Diseases.** The use of electrolysis, ionization, high frequency current and the *x*-rays are discussed by W. K. Sibley.[5] For nevus and hypertrichosis Sibley recommends electrolysis in connection with the other means of treatment for the removal of small tumors and sebaceous cysts. An aluminum needle connected with the negative pole is thrust into the center of small cysts and a stream of about 5 milliamperes strength is used for from 1 to 2 minutes. Within the next few days after the treatment the cyst shrivels up. For larger cysts a few drops of physiologic salt solution are first injected and then two copper needles are inserted parallel to each other, but not touching. Then, according to the size of the cyst, a current of from 2 to 5 milliamperes is used for from three to five minutes. After a few days the puncture opening enlarges so that the cyst contents and walls may be removed. The same procedure is useful for molluscus contagiosum. Ganglion of the hand may be removed by using a stream of from 5 to 10 milliamperes for from one to five minutes after inserting an aluminum needle as electrode into the center.

The ionization of magnesium salts is recommended for the various forms of cutaneous tuberculosis, especially lupus vulgaris, which has not ulcerated, and also for all tuberculous fistulae. Warts may be removed by the ionization of magnesium salts, corns by zinc salts, and scars are favorably influenced by chlorine ions.

High frequency currents give fine results in all forms of pruritus, according to Sibley, especially in pruritus ani and pruritus vulvae. He uses daily applications of a glass vacuum electrode for from 10 to 15 minutes;

(5) Practitioner, March, 1918.

for hemorrhoids and fistula-in-ano he uses a pointed flask as electrode with favorable results. Improvement has also been obtained by this method in cases of eczema, alopecia areata, acne vulgaris and rosacea, lupus erythematosus, and lichen chronicus. The part of the paper which treats of *x*-ray therapy contains nothing new.

**X-ray in Eczema.** M. K. Fischer[1] reports the following cases:

Case I. A 53-year-old man for twelve years had eczema hiemalis affecting both hands, the wrists and the lower portion of the forearm; with the coming of cool weather, usually about the middle of October each year, he had a periodic return of the eruption, this assuming the character of a severe dermatitis, with weeping, deep fissuring of the skin and pronounced itching; until *x*-ray treatment was instituted three years ago, the condition would persist, despite all forms of local and systematic medication, until the coming of warm weather in April or May, when it would spontaneously disappear. Three winters ago he was referred to Fischer a week or two after the annual onset of the disease. He was given thirteen exposures to the rays, improvement being noted after the third treatment, and by the first of December the skin was devoid of all traces of the disease, and so continued throughout the winter months. Each October since then there has been a recurrence of the eczema, and he has returned for treatment, the eruption yielding in both instances to less than a dozen exposures. Although there is still the tendency to recurrence, which in all likelihood will persist, this man has been able to cut down the period from six months to one month in which he annually suffers from the disease.

Case II. A 37-year-old housewife had a diffuse patch of squamous eczema covering practically the middle third of the anterior surface of the leg; here the condition was present without material change for three years. The itching was so severe that she was unable to rest comfortably at night. Three exposures were sufficient to relieve this symptom, and a half dozen more to cause

(1) Med. Record, Aug. 30, 1913.

a disappearance of the eruption. On two different occasions since then the patient has returned for a single treatment to relieve what was an apparent tendency to return. A couple of exposures to the *x*-rays was sufficient to hold it in check.

Case III. A 62-year-old man had a patch of eczema on his wrist, bright red in color, circumscribed, of three months' duration, unattended by scaling or weeping, but decidedly itchy. Nine exposures to the rays sufficed to clear up entirely this eruption. There has been no recurrence.

Case IV. A 28-year-old nurse had acute fissured eczema attended with a marked inflammatory reaction of the surrounding skin. It was present on hands and neck and caused considerable distress, both of a mental and physical nature. It was remarkable to note the relief afforded by only one application, and the eruption, which had been present for five weeks before röntgenization was instituted, practically disappeared after four exposures made at an interval of one day between treatments.

Case V. A 31-year-old physician had at intervals extending over a period of six years a mild attack of fissured eczema of the fingers of both hands, the lesions being minute cracks in the skin surrounded by a slightly inflammatory base. This eczema appears every three or four months. One treatment by the *x*-rays is invariably sufficient to clear it up for another period of several months.

Case VI. A 46-year-old housewife was at no time during the past four years entirely free from eczema, every few months there being a return of the erythematous form, attended with weeping and crust formation, the skin in the intervals between these attacks being dry, fissured, slightly scaly and always itchy. This patient, after having received twenty-one exposures to the rays during the height of one of the acute outbursts of the dermatitis, is now absolutely devoid of any eczematous lesion whatsoever.

These reports are selected from sixty-two cases of eczema treated by the *x*-ray in hospital and private prac-

tice. Of the remaining fifty-six cases in the series forty-seven had, after cessation of treatment, an entire disappearance of the eruption, and of this number eighteen have since returned after a period of five weeks to sixteen months for treatment for recurrences. These lesions in every instance, save three patients still pursuing treatment, yielded to a few exposures, invariably fewer in number than were originally given at the first series of exposures. Of the remaining nine cases six were benefited as far as itching and decrease in virulence were concerned, while the remaining three were not benefited.

Employment of the rays requires a tube of very low penetration, and a minimum amount of current, only sufficient to illuminate the tube slightly and with scarcely any penetrating power. To some extent the physician must be governed by the character of the lesion, whether acutely inflammatory or chronically thickened and scaly. What Malcolm Morris says: "The fundamental principle which should guide the practitioner in the treatment of eczema is to soothe when the inflammatory process is acute and stimulate when it is chronic," applies very well here. In the former instance only the mildest sort of treatment is permissible, the tube at some distance from the part treated, 18 to 24 inches, and the seance of only short duration, from 5 to 6 minutes. Where the lesion is more chronic, or of a squamous character, a stronger light in the bulb is desirable, the part treated is brought closer to the tube and a longer exposure required, ranging from 10 to 15 minutes.

The effect of the rays as a remedial agent in eczema is most probably due to the low vitality of the diseased cells, which are destroyed by the action of the rays, while the normal healthy cells of the part mildly stimulated. No *x*-ray dermatitis should result from the application of the rays in the treatment of eczema. Better results are secured if treatment is given frequently, every other day, this exposure to be of short duration, than if longer treatments are given at wider intervals Fischer has had no experience in the infantile form of the disease on account of the difficulty of holding a child

quiet sufficiently long to apply the rays. In occupational eczema permanent cure cannot be assured unless the patient is removed from the source of the irritation, although in his clinic Fischer has had quite a number of cases among dyers who work in a hat factory, who could not give up their means of livelihood. The rays in these men prove decidedly beneficial, diminishing materially the virulence of the attack, but as long as they worked they were never totally free from eczematous patches.

It will be noted that in a large number of these reported cases there has been a tendency to recurrence. Yet no other recommended method of treatment of eczema can assure the patient that he will never have a return of the disease.

Constitutional treatment must not be neglected if the Röntgen treatment is to be carried out. How much eczema may be regarded as a metabolic disease is questionable, but hygienic measures, if necessary, proper regulation of the diet, if indicated, and the removal of any form of local irritation are all necessary adjuncts to local treatment. However, the cases in this series practically all have been under treatment by other measures before receiving *x*-ray treatment, and were referred for the reason that persistent drug medication had proven of no avail. The fact that improvement was noted simultaneously with the beginning of röntgenization would point to this agent as the potent factor in securing the favorable result. The field of the radiologist is somewhat limited in routine cases, and, no doubt, as good results might be secured by other means.

**X-ray in Psoriasis.** According to W. L. Freud[2], the *x*-ray should not be used in cases of the fresh eruption of psoriasis punctata, in which the disease is extending and involving new areas of the body; better in this stage are general baths, the application of sulphur and the administration of arsenic, either internally or subcutaneously. Later, when new nodules no longer appear, and especially when dry, hard plaques are present which prove obstinate to every form of medicinal treatment or

(2) Wien. klin. Wochenschr., Mar. 8, 1913.

continually recur in the same place, the indication is for the *x*-ray treatment after a preliminary curettage.

**X-ray in Ringworm.** G. B. Batten[3] advises the following procedure: He has a wooden tube with a 5-inch aperture and with transparent distance rods of such a length that by simply removing them with their holder and putting the child's head at the level of the aperture one moves it from the "full time" Sabouraud distance to the "half-time" Hampson distance; for instance, with a 5 in. (or 13 cm.) tube, the rods are 1¾ in. in length vertical measurement; with the distance rods of Batten in place, the child's head is 6 in. from the anticathode; with the rods removed, the distance is 4¼ in., that is, the half-time distance. He devised a very simple pencil-like pastille-holder, and this is inserted radially to the anticathode.

With rods in place he put the pastille at Sabouraud's half distance, that, is 3 in. from the anticathode. When the rods are removed and the head moved to the nearer distance the pastille distance is kept the same (3 in. from the anticathode) but a new pastille is, of course, used.

He uses a small piece of bandage across the opening of the tube shield. This is kept in place by being fastened to pieces of bonnet elastic with safety hooks to the rim of the shield.

His procedure for treatment of cases is as follows: Expose the area over the right ear and the area at the nape of the neck of the first child at the full distance and note the details of amperage, voltage, milliamperage through the tube, and the equivalent spark-gap, and find how long and how many interruptions the tube is taking to change a pastille to tint "B." Then he removes distance rods and places another area of the child's head up against the bandage—that is, 4¼ in. from the anticathode—inserts another pastille at the same distance, and sets the tachymeter for half the number of interruptions, or half the time that was taken with the child's head at the full distance—that is to say, if the tube took 10,000 interruptions with the rods in, he sets the tachymeter for 5,000 interruptions with the rods out. He does

(3) Lancet, Oct. 11, 1913.

the three remaining areas of the first child at the half-time distance. With the second child he puts rods in again and does an area at the nape of the neck, again noting the number of interruptions required for tint "B." He removes the rods and does the four remaining areas at the half-time distance. Repeat this for all the other cases if the tube conditions remain fairly constant.

Of course, while dosing the areas at the half-time distance the pastille will only undergo a change equal to half of tint "B." However, the same pastille or some portion of it is left in for two such half-time distances, and the tint then produced is the same as the Sabouraud tint "B," and serves as a useful and efficient check to one's dose calculated from the number of interruptions or the time occupied.

In the *x*-ray treatment of ringworm F. Emery-Jones[3] remarks that during the last three years the single-dose method has been used. The apparatus used consists of a 12 in. coil with a dipper brake and tachimeter for regulating the number of interruptions. This is in circuit, with an automatic cut-out switch. By this means a definite number of interruptions can be given. There are also arrangements for measuring accurately the voltage and amperage passing through the primary and the milliamperage through the tube. There is an alternative spark gap. A Sabouraud pastille, which is bleached in the sun and used four or five times, is required for each application.

With this apparatus the average time for treatment of a single patch varies between five and eight minutes. The advantage of the automatic switch is that one can leave the apparatus for a time knowing there is no danger of an over-exposure. The patients are treated inside a cubicle, the operator being outside. The cubicle is made of two thicknesses of wood, sheet lead ⅛ in. thick being interposed. The operator can watch the patient through a lead-glass window. As regards tubes, small light anode tubes are used, being contained in a stand fitted with a lead-glass shield, which is movable in any direction.

(3) Lancet, Oct. 11, 1913.

The statistics of the last two years are as follows: The number of patients treated was 200. Of this number 93 were infected over the whole scalp; in the remainder the scalp was only partially infected, and required from one to four applications. The reason for second applications were: (1) Nervousness on the part of the patients, and inability to keep still; (2) lack of suitable tubes owing to an excess of patients; (3) small infected areas which were not epilated owing either to movement on the part of the patient or to the tube not being quite central in the holder, as tubes vary in size, and some do not fit the holder. From all these causes 26 had to be treated a second time, this being the number out of a total of 630 applications. The majority required one more application to a small area, which was given through a small lead-glass adaptor. In the 93 cases infected over the whole scalp Keinbock's method was almost entirely used, five applications being given—one to the top of the head, one to the vertex, one to the back of the head, and one to each side. The usual practice was to give two or three applications each morning, and the remainder in about a week. The average time in which epilation took place was two weeks and five days. The usual time for the hair to recommence to grow was about seven weeks. In one case the hair was not fully grown for six months. In another, owing to two patients having identical names, one side of one patient's head received practically a double pastille dose. The hair returned quite healthily, although a considerable time afterwards. There has not been a single case of *x*-ray burn or of permanent alopecia. The greater number of patients had treatment with ointment and lotions, some even for years. The treatment with *x*-rays gave the best, and certainly the quickest result, especially for well-established and extensive cases. With proper apparatus, and in expert hands, it is perfectly safe.

**X-ray in Superficial Epithelioma.** Its value is unquestionable, according to E. H. Skinner.[4] It is justifiable for palliation but of questionable curative value in deep carcinoma cutis. No specific effect of the *x*-ray

(4) Missouri Med. Assoc. Jour., April, 1913.

upon the peculiar tissues of the eye occurs. The conjunctiva does not show reactions to the *x*-ray as readily as the skin. The *x*-ray should precede surgery in the treatment of superficial and papillary epithelioma.

**X-ray in Palmar Dermatoses.**[5] Many skin affections in the palms of the hands are very rebellious to ordinary methods of treatment. Every dermatologist is familiar with the long and protracted cases of chronic eczema in this region, with which ointments, lotions, and even plasters seem of no avail. Haldin Davis believes that the *x*-rays are as useful in chronic eczema palmarum as they are in psoriasis—or even more so. The more obstinate forms, in which there is considerable hyperkeratosis and parakeratosis with painful fissures and cracking of the epidermis, are greatly benefited by radiotherapy. Several cases are quoted in which the dose of the rays given varied from a half to a full pastille dose. In one patient the eczema had existed on the palms for thirty years, accompanied by much irritation and cracking. Three applications of the rays caused a very great improvement so that she was able to obtain better sleep than she had done for many years. One great advantage of radiotherapy in this situation is that the method is cleanly, dispensing with cumbersome bandages and dressings, so that the patient can generally follow his ordinary occupation. In palmar psoriasis similar good results may be obtained.

**Radium and the Lepra Bacillus.** Verteuil[7] refers to a recent paper in which the authors point out the bactericidal action of the alpha and beta rays of radium and contend that this action is a direct one. Verteuil has made some observations on the action of radium on the lepra bacillus and believes that the action is not always a direct one. While the authors referred to above made their experiments *in vitro*, Verteuil carried his out *in vivo*. He applied a radium varnish apparatus containing 80 milligrammes of radium bromide of 500,000 activity to leprotic nodules for the space of one hour, the apparatus being enclosed in a

(5) Urolog. and Cutan. Rev., 1913.
(7) Brit. Med. Jour., May 17, 1913.

piece of rubber cloth. The amount of alpha rays coming through such an apparatus would be very small indeed, the soft beta rays being those that principally would act in that space of time.

The leprotic nodules were reduced in size, but the most marked and interesting change was in the appearance of the bacilli present in the nodules. Daily examinations were made of slides smeared with serum punctured from the nodule and stained by the Ziehl-Nielsen method. For thirteen days after the application of the radium practically no change was noticed in the appearance of the lepra bacilli. On the fourteenth day there was some granular degeneration to be noticed. This increased and became extremely marked between the third and fourth week, when there was not a single whole bacillus to be seen under the microscope, only small granules irregularly scattered over the field. This bactericidal or destructive action was much more marked than that which occurs after nastin treatment.

The fact that there is no apparent action on the bacilli before the fourteenth day indicates that the bactericidal action of the radium rays is not direct, but probably is exercised indirectly through some chemical effort of the tissues, some substance or substances toxic to the bacilli being slowly evolved in the leprous mass.

If it were possible to reach all the tissues of the body with radium rays, it is conceivable that they might prove an effective means of fighting this disease. This result can be attained only to a certain extent by inhaling radium emanation, or by drinking the emanation dissolved in water. For this method to be effective, the emanation would have to be present in fairly large quantities.

**Radium Treatment.** Results in 578 cases are thus summarized by A. E. H. Pinch.[8] Epithelioma if flat, superficial and accompanied by little or no ulceration, yields satisfactory results. The results are quite good in ulcerating forms also, but a much longer treatment is required and considerable scar formation results. Treatment of epithelioma of the mucous surfaces, on the other

(8) Lancet, Oct. 18, 1913.

hand, is usually disappointing, though some temporary relief may follow. In inoperable carcinoma of the uterus radium will often bring about results which cannot be obtained by any other mode of treatment, checking the rate of growth, or arresting it, and in some cases even converting the case into an operable one. In cancer of the rectum radium relieves the symptoms and usually retards the rate of progress. In carcinoma of the breast, also, there are encouraging results, especially in the sclerotic forms of growth. Of all forms of malignant disease rodent ulcer is by far the most amenable to the action of radium. Superficial nevi are quite successfully treated by radium, as is, also, the case with the cavernous forms. Keloid responds with most admirable results. Parotid tumors are particularly amenable to treatment, even when malignant. Lichenification of the skin and some forms of pruritus are quickly cured. While psoriasis is also cured, it shows a tendency later to return. Lupus vulgaris does not respond to radium as well as it does to Finsen light.

**Treatment of Hypertrichosis.** The instruments required for this operation, according to A. Brand,[9] are a galvanic battery, the motive power of which may be either cells or the street current; a milliamperemeter, in connection with the battery, which, although not absolutely necessary, is very useful, as it furnishes the only means of measuring the current; two conducting cords, one for the positive and one for the negative pole; a sponge electrode of the type generally used with electric batteries; a needle holder about three inches in length; and a dull pointed platinum needle. A magnifying glass mounted on a needle holder may be used; but is hardly necessary with good light and good eyesight. A small epilation forceps completes the outfit. Patients are best treated by good daylight, although it is possible to do the work by good artificial light; but that is very trying on the operator's sight and should be discouraged.

The technic of the operation is as follows: The patient is put in proper position on a chair or on an operating table, and the site to be operated on is washed with

(9) Urolog. and Cutan. Rev., May, 1913.

tincture of green soap and then with absolute alcohol, till the soap is washed off; the alcohol is allowed to evaporate. The conducting cords are attached to the battery, and, to avoid mistakes, it is advantageous to have the two cords colored differently—red, a danger color, for the positive, and green for the negative pole. The sponge electrode is attached to the positive pole and the needle holder, with the needle in place, to the negative pole. The patient then grasps the sponge electrode by the handle with the left hand and is shown how to make contact by pressing the sponge against the palm of the right hand at the command of the operator. The sponge should be moistened with warm water to secure a better flow of current. Contact may be made with any part of the patient's body, but it is best to make it with the palm of the opposite hand as both hands are thus engaged, giving the patient no opportunity to grasp the hand of the operator when experiencing the first sensation of pain.

The operator selects the hair he desires to work on, stretches it with his forceps in the direction it grows, and the needle is inserted into the follicle in a line parallel with the hair, to a depth of about a tenth or an eighth of an inch. The patient is now told to connect the sponge electrode with the opposite palm and the current is on. After a lapse of a few seconds, an effervescence of hydrogen gas is seen at the mouth of the follicle; very slight traction is then made on the hair with the forceps, and, if the papilla has been destroyed, the hair comes out very readily. To insure total destruction of the papilla the needle is left in situ for another second or two and worked around in a circular manner. The patient is now told to disconnect so as to avoid shock, and the needle is withdrawn.

This method is repeated with each individual hair. The operator should instruct his patient carefully before starting regarding the make and break of the current, so as to avoid shocking her unnecessarily. The needle should always be inserted into the follicle before the contact is made, and the patient should always disconnect before the needle is withdrawn. The operator must

bear in mind that it is the negative pole that gives rise to electrolytic action, while the positive pole is the indifferent one; and he should guard himself very carefully against making the mistake of attaching the needle holder to the positive pole instead of to the negative. Such a mistake would cause charring and a permanent black spot.

The patient should be told at the outset that some hairs cannot be destroyed with one treatment, and that it will be necessary to treat them again should they return. To avoid having a very frightened patient returning to one's office the following day, it is advisable to inform her that puncture spots and redness and perhaps wheals will be the immediate result of treatment, but the skin assumes its normal condition after a few days.

To avoid scarring, as little current should be used as possible. Only the coarse hairs should be removed at first and lanugo is better left alone. The operator should spread his work over a large area, as many hairs removed at one sitting from a small region will give rise to too much inflammation with probable ulceration. A few days should elapse before working on the same area again.

There is practically no after treatment; but the patient may be instructed to wash her face with warm water and rub in a little cold cream when she gets home. Wiping off the froth from the mouth of the follicle after withdrawal of the needle shows the punctate openings too plainly, but if the effervescence is allowed to dry, the openings will close up much better. These patients scrutinize their faces very carefully after treatment, and the less disfigurement they see, the more hopeful they are of ultimately being rid of their deformity.

## GONORRHEA.

**Abortion of Gonorrhea.** L. Lilienthal and J. Cohan[1] state that patients in whom the first subjective symptoms are of not longer than twenty-four hours duration, where no complications are present and only a slight seropurulent discharge, should receive the abortive treatment. On three successive days three injections daily of 8 c.c. of from 4 to 5 per cent. protargol are given, each injection retained in the anterior urethra for 4 minutes. About one-half of the patients thus treated were free of all symptoms from the fourth day on, and a number of the cases treated as far back as 1905 remained free from all further manifestations. Severe complications were not noted, even in cases not successfully aborted. In all of the cases there was a marked curtailing of the gonorrheal attack.

**Gonorrheal Complications.** D. Loumeau[2] reports the following case: The patient was a man 24 years of age who developed an attack of gonorrhea which lasted upwards of three years. It was followed by chronic prostatitis accompanied by painful ejaculations. By way of complications he had acute membranous cystitis and suppurating prostatis, epididymitis, a perineal fistula, abscess leading to *fistula in ano* with weakening of the sphincter. Later, the infection developed into septicemia which involved the brain, the globe of the eye, the vertebral articulations as well as those of the pelvis and both knees, one of which became ankylosed. He had attacks of suffocation attributable probably to infarction or pulmonary edema or possibly to compression of the vagi by posterior mediastinitis of vertebral origin.

**Rectal Gonorrhea.** V. G. Pedersen[3] reports the case of a youth who prided himself on being unusually careful and clean in his attention during an acute gonococcal

(1) Med. Klinik, Feb. 16, 1913.
(2) Monde Méd., May, 1913.
(3) N. Y. Med. Jour., Feb. 15, 1913.

urethritis by using a sponge for frequent bathing of the genitals. Unfortunately he used the same sponge for bathing his buttocks and anus, and thereby acquired an infection of the anus and rectum. Proctoscopy revealed gonococcal warts, several inches up, numerous and of various sizes. Surgical removal and lavage cured the patient.

**Gonorrheal Stomatitis** is to be divided into the following groups of suspected cases according to J. B. Stein:[4] 1, Cases reported before the discovery of the gonococcus; 2, cases where only a microscopic examination was made and the exudate revealed a microörganism which resembled the gonococcus in its morphological, staining and grouping characteristics; 3, cases where, in addition to the microscopic examination and cultivation of the suspected microörganism upon agar or serum agar, proving its resemblance to the gonococcus, the suspected microorganism when grown, upon von Lingelsheim's sugar-litmus-serum-agar-media shows the essential characteristics of the gonococcus.

In the diagnosis of gonorrheal stomatitis one should demonstrate the morphologic, staining, grouping, and ordinary cultural characteristics of the gonococcus, and then verify the conclusion by the use of the sugar-litmus-serum-agar-media of von Lingelsheim.

Stein gives a table, found on pages 82 and 83, of differential diagnosis:

**Livedo Annularis and Gonorrhea.** Balzer and Landesmann[5] report a 52-year-old man who in October, 1910, had a gonorrheal urethritis accompanied with prostatitis. The urinary infection was suddenly followed by pain in the heels and toes. After several months treatment he was cured with the exception that the pain in the left heel and toes persisted, rendering walking impossible. He was treated locally by warm emulsions of turpentine. At the end of October he left the hospital, but was readmitted a month later with increased pain. The morning drop was present but gonococci were absent. Two months later, in February, 1913, the skin

(4) Urolog. and Cutan. Rev., May 1, 1913.
(5) Bull. Soc. Franc. de Derm. et Syph., January, 1913.

over the left foot became pigmented, being reddish brown or violaceous in streaks, the vessels showing prominently through the erythema. Pressure caused the red coloration to disappear but did not affect the brown pigmentation. The reticulated appearance was more noticeable after a bath. It was not painful to touch and the superjacent skin was dry and inclined to desquamate. No other cutaneous lesion was present elsewhere. The case would seem to belong to the variety of livedo described by Balzer and Merlé as *"livedo permanente a forme erythémato-inflammatoire,"* as distinct from the transitory type which is seen in both children and adults. In some cases of the more severe affection some grave visceral malady, such as cirrhosis of the liver, has been coexistent. Heart disease, heredosyphilis, latent tuberculosis and lymphatism have also been noticed in association with livedo annularis. The condition appears to be dependent upon a chronic reticular periphlebitis, but no satisfactory explanation appears to be forthcoming as to why the subcutaneous venous system should be affected. The local action of heat, as applied for the relief of pain, may have been a factor in the present case; but it may be surmised also that the gonorrheal osteitis had some influence in its production by lowering the resistance of the vessels.

**Iodine Treatment of Female Gonorrhea.** O. Hofman[6] advises the following procedure: Place the patient in the dorsal position as for ordinary vaginal examination; separate the labia with the thumb and index finger of the left hand, exposing the vestibule, clitoris, and meatus urinaris; swab the parts thus exposed and also the labia minora and inner surfaces of the labia majora with a solution of 3.5 per cent iodine crystals in 95 per cent alcohol. Next search for the orifices of Skene's glands, force in a few drops of the same solution by means of an ordinary hypodermic syringe to which is attached a needle made blunt by filing. The writer prefers a Gottheil syringe with a long blunt needle, as it is somewhat more convenient to handle. Next search for the external openings of the vulvovaginal glands

(6) Interstate Med. Jour., August, 1913.

## STEIN'S TABLE OF DIFFERENTIAL DIAGNOSIS.

See page 80.

| Characteristics | Morphologic, Staining, Grouping, Etc. | CULTURAL | | FERMENTATIVE:— (Grown Upon von Lingelsheim Sugar-Litmus-Serum-Agar-Media) Capability of Causing Fermentation of | | |
|---|---|---|---|---|---|---|
| | | A | B | Dextrose | Levulose | Maltose |
| 1. Gonococcus | Gram-negative diplococcus: may appear in tetrad form; found extra- and intracellular. | Rarely grows on ordinary agar. | On serum-agar the colonies are more or less round, delicate and gray, and can be scarcely distinguished from those of the meningococcus; when the colonies are older they have a "lobe-like" border. | + | − | − |
| 2. Micrococcus meningitidis cerebrospinalis | Gram-negative diplococcus; usually appearing in tetrad form. Found extra- and intra-cellular. Morphologically very similar to the gonococcus; in cultures there are great differences in the cocci. | Difficult to obtain cultures. As a rule it grows on serum-agar. | On serum-agar the colonies are very delicate, grayish translucent with smooth edges. Under the microscope (Leitz 3. Ocular I.) the colonies appear homogeneous and have a dirty light-yellow color; the edges are smooth and somewhat wavy. | + | − | + |
| 3. Micrococcus catarrhalis. (R. Pfeiffer) (Diplococcus pharyngis communis) | Gram-negative diplococcus. Found extra- and intracellular. | Grows upon ordinary agar. | Forms upon serum-agar round, white, compact colonies with dry, uneven surfaces and usually irregular edges. When examined by a low-power lens the colonies appear brown and granular. | − | − | − |
| 4. The diplococcus pharyngis siccus | A fine gram-negative diplococcus. | Grows best upon blood-agar. | Upon blood-agar the colonies may have a diameter of 3 m.m. After some days their surfaces become dry, firm, and wrinkled; so that | + | + | + |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | they can not be completely broken up when shaken in a fluid medium. | | | |
| 5. Micrococcus cinereus | A plumper gram-negative diplococcus; the cocci usually forming themselves in discrete masses. | Grows upon ordinary agar. | Forms upon serum-agar small round gray or grayish white colonies. Under the microscope the colonies appear brown, coarsely granular, and have smooth borders. | − | − | − |
| 6. Diplococcus pharyngis flavus I VVV | A gram-negative diplococcus. Very similar to the meningococcus. Seldom appears in tetrad form. | Grows upon ordinary agar. | Forms upon serum-agar roundish slightly raised grayish yellow colonies, which are sometimes difficult to distinguish from colonies of the meningococcus. | + | + | + |
| 7. Diplococcus pharyngis flavus II | A very small gram-negative diplococcus. Resembles the micrococcus catarrhalis. | Upon serum-agar it forms colonies resembling those of the micrococcus catarrhalis. | Colonies grown upon a blood-serum medium or Löffler's serum appear golden yellow. | + | + | + |
| 8. Diplococcus pharyngis flavus III | A gram-negative diplococcus of the size and appearance of micrococcus meningitidis. Does not form tetrads. | Does not grow upon ordinary agar. | Forms upon serum-agar, round, slightly raised, yellow translucent colonies, which when examined by a low-power lens are very similar to those of the meningococcus. A pure culture is light yellow. | ± | − | ± |

**+ = Fermentation. (The culture medium is colored red.)**
**− = No fermentation. (Growth appears blue.)**
**+ = Not marked, but good evidences of fermentation.**
**± = Doubtful or slight evidences of fermentation.**

and repeat the injection. The writer has not found it necessary to treat the urethra directly except in isolated instances.

The patient is now placed in the Sims' position and the Sims' speculum introduced. The vagina is swabbed dry with cotton and the presenting cervix (not the canal) is painted thoroughly with the iodine solution by means of a cotton swab about the size of a hickory nut firmly fastened in the ordinary dressing forceps. The anterior wall is thoroughly painted, then both the right and left sides. Now press the swab firmly up the posterior cul-de-sac, partly withdraw the speculum, rotate it so that it will pass against the anterior vaginal wall, and remove the swab. Next introduce a narrow strip of gauze as high up against the posterior wall as possible, remove the speculum and allow the gauze to protrude beyond the introitus. If a bivalve speculum is used, patient in the dorsal position, it becomes necessary to swab the vagina in smaller sections, that is, on either side, where the separation of the blades allows of the exposure of the walls. After swabbing both exposed areas the speculum is partly closed and rotated sufficiently to expose two new areas, and so on until the whole vagina has been painted. The swab is then firmly pressed into the posterior cul-de-sac, the speculum withdrawn, the vaginal walls allowed to collapse and the swab is slowly removed with a rotary motion thus insuring a complete and thorough application to the tissues. A small piece of gauze is then introduced as before.

The patient is prone to complain of considerable smarting and burning for half an hour or so, but rarely any longer. Some patients seem to experience no inconvenience whatever. The urethra as a rule requires no special treatment locally. Doses of from 5 to 7½ gr. of urotropin are given four times daily with plenty of water. The patient is ordered to rest as much as possible, and, where it is possible, she is kept in bed and a light diet is insisted upon; alcoholic beverages are prohibited as well as both tea and coffee. The bowels are kept open by cathartics; never use an enema, for its use enhances the possibility of a rectal infection.

# SYPHILIS.

## THE CHANCRES.

**Upper Lip Chancres** are not common, the lower lip being more usually involved. The following case, described by Hallopeau and Francois-Danville[1] is, therefore, of interest. The patient was a woman of 33, a dressmaker, who presented herself in June, 1912, with an enormous ulcer upon the upper lip, which had existed since May 22. She recollected having been kissed by a suspected person about the end of April. She had had no treatment. The ulcer, which was upon the right side, distorted the ala nasi, and was larger than a half dollar. The surface was ulcerated and covered in part by a blackish crust. Its superior edge was limited by the naso-labial furrow. On removing the crust, a raw, bleeding surface was revealed, covered with numerous indentations. The induration was pronounced, and the neighboring lymph glands were enlarged. A slight erythematous halo surrounded the chancre. A tiny abrasion of the surface must have existed previous to the infection, for the skin is relatively thick in this region. The large size of the ulceration is not exceptional, for primary lesions upon the face are often of considerable extent, as may be seen in the museum of the hospital of St. Louis, Paris. The nose escaped, probably because of the close connection of the integument and the subjacent cartilage, whereby an obstacle is presented to invasion by continuity. This fact explains why the usual circular shape of a chancre upon the face was departed from.

**Chancre Four Days After Salvarsan Injection.** M. Rosenthal reports that a patient came to him with an

(1) Amer. Jour. Derm., October, 1912.

indurated penile chancre, which had persisted for nearly three weeks. There was a double inguinal adenitis, an extensive macular eruption and patches in the mouth and on the tonsils. The patient was given the inunction treatment. For three years he religiously followed the treatment which consisted of inunctions at first, followed by mercurial injections and at varying intervals mercury by the mouth.

March, 1910, the patient returned stating that for two years he had done nothing in the way of treatment for his syphilis. He had been absolutely free from any symptoms and enjoyed good health. He weighed 190 pounds which was 20 pounds more than he weighed before contracting the disease. He wanted a Wassermann test, having read of its infallibility. His mind was unduly occupied with matters syphilitic and he was well informed on recent advances in the study of the disease. The Wassermann report was negative. The patient was assured of freedom from any future complications.

December, 1910, the patient insisted on a confirmatory Wassermann since reading that "a positive Wassermann is proof of the existence of syphilis but a negative result may be accidental or transient." The second report gave a similar negative result.

In November, 1911, he returned stating that for several months he had been having periodic attacks of intense pain radiating down the legs. He at first attributed them to exertion, but since they began coming on independently of any exercise he abandoned that theory. He also had irregular abdominal pains at times, followed by nausea and vomiting, and unassociated with the presence of food in the stomach. The knee-jerk was lost on the right side and diminished on the left. A provisional diagnosis of locomotor ataxia was made. January 5, 1912, the patient consulted Dr. Peterson, who confirmed the diagnosis and advised the use of salvarsan.

January 8 an intravenous injection of 0.6 gm. salvarsan was followed by slight discomfort, dizziness and headache for several hours. January 12, the patient showed a small erosion on the glans penis, which looked not unlike an abraded surface after a vesicle has rup-

tured. Having on a number of occasions seen herpes follow the administration of salvarsan, Rosenthal concluded that the sore was herpetic, and prescribed accordingly. January 18, the sore was distinctly indurated. There was some inguinal adenitis, although treponemata were not found. Rosenthal was not disappointed at the failure to find the organism, being satisfied that the sore was an infected herpetic eruption. Local treatment was stopped. January 22, the edges of the sore were markedly indurated, the inguinal glands were large and a decided macular eruption appeared on the body. An examination of the serum from the sore showed undoubted treponemata. A Wassermann test made on the following day was positive. There has been no change in his tabetic symptoms. A week later the patient left the city.

The unusual features of this case are, first, the development of a disease, presumably of syphilitic origin, in an individual giving repeated negative Wassermann reactions; second, that a man suffering from the direct effects of syphilis should contract a chancre and third, that a chancre should develop four days after an intravenous injection of salvarsan. Another point is of interest, the fact that, despite the tabes, sexual power was retained. Of course, the case also shows how parasyphilis may be complicated with syphilis.

**Syphilis Reinfection.** A patient with a fresh infection in 3½ months is reported by M. Busch.[3] A man on Feb. 18, 1913, had a penis chancre. The Wassermann was negative. Four doses of neosalvarsan were given intravenously. On June 4 he had another chancre in the coronary sulcus. The Wassermann reaction at first negative became positive on June 11. A secondary eruption came in due time. Treponemata were found in the first chancre as also in the second, which pursued a regular course despite treatment.

**Syphilis d'Emblée.** J. Almkvist[4] describes a case in which the primary lesion remained undiscovered by the ordinary methods of inspection and palpation even

(3) Wien. klin. Wochenschr., Aug. 21, 1913.
(4) Derm. Wochenschr., No. 7, 1913.

though the patient was under skilled observation practically every day. The case was that of a man, aged 20, who became infected with gonorrhea and syphilis. He was under treatment for the former affection for no chancre was discovered. Three months after the infection coitus a maculopapular eruption appeared. The urethral secretion was found to contain typical spirochetes, and just behind the fossa navicularis was a significant erosion, as demonstrated by the endoscope. The inguinal glands were slightly swollen but not painful. The author is inclined to the opinion that the spirochetes were introduced into the urethral canal with the gonococci, only attacking the mucous membrane when that structure was damaged by gonorrheal inflammation. From a consideration of his own, as well as of twenty-three reported cases in which the primary lesion of syphilis could not be observed by ordinary means, he concludes that chancre in that part of the urethral canal posterior to the fossa navicularis may easily escape attention. All cases in men should be submitted to urethroscopic examination before a diagnosis of syphilis d'emblee is made. In women, the spirochetes often remain in the cervical canal, and their presence can be demonstrated in the cervical secretion. Cases such as the above show that organisms besides gonococci can be sucked into the urethral canal of man during coitus.

### SYMPTOMATOLOGY.

**Syphilis During Pregnancy.** D. Pujol[5] reports the following case: A 27-year-old woman of defective general health was six months pregnant. Movements of the fetus had been felt. She had had two children die in infancy and at two months had had a miscarriage a year previously. The husband, six months before marriage, had a painless penile nodule followed by mucous patches.

The wife's thyroid gland was so enlarged as to simulate goiter.

In front of the neck, below the thyroid cartilage, there was a crescentic swelling with the concavity upwards.

(5) Monde Méd., September, 1913.

PLATE V.

Tubercular syphiloderm. Infection of eight years' duration.—*Dr. P. F. Shaffner's patient, West Side Dispensary, Jewish Aid Society, Chicago.*

Gumma of the lip in a case of syphilis of five months' duration.—*Post Graduate Hospital.*

Plantar syphilide occurring in a woman 68 years old. Date of infection unknown. Well marked circinate indurated border.—*Post Graduate Medical School.*

One of the branches of this crescent, the left one, was larger than the other. The swelling was found to be adherent to the trachea which is followed in its imparted or physiologic movements.

The swelling might therefore very easily lead to a mistaken diagnosis, at any rate from an etiologic point of view. Pujol was put on the track by the existence of three cutaneous ulcers evidently syphilitic. At these three spots the skin was adherent to the tumor while it was freely movable elsewhere. These ulcers were situated over the left branch of this goiter-like tumor. They were about the size of a threepenny piece, with red, inflamed, undermined margins. The base was granular, pasty and puriform. These again were features which suggested a spirochete origin, all the more so seeing that the ulcers were quite insensitive, so much so that the patient had not thought it worth while to apply any dressing, though for appearance sake she had covered them with a scarf.

Wassermann reaction was positive in the woman and in her husband.

Arsenobenzol was injected into the patient's veins three times with a week's interval between each injection. At the same time, to readily-accessible ulcers, arsenobenzol was applied.

Within twenty-five days everything had subsided, the neck being very markedly reduced in size. At the onset of treatment it measured 37 or 38 centimeters in circumference whereas after treatment it was only 34 or 35 centimeters. The thyroid tumor disappeared and every trace of goiter. Then too the syphilitic ulcers completely healed and all that remained of them was little scars which were colorless and adherent to the subjacent tissues. The healing of the ulcers was the first evidence of the action of the arsenobenzol, the tumor taking longer to clear up.

However, the woman was pregnant and her offspring was exposed to great risk by the maternal syphilis. While there was justification for apprehending prejudicial effect of the arsenical treatment on mother and fetus, yet none of these contingencies was realized. The

mother bore the injections of arsenobenzol well, only manifesting a trifling reaction. Labor took place under perfectly normal conditions, the infant was healthy in every respect though somewhat frail. The placenta revealed no pathologic appearances.

Leaving on one side, as of secondary interest, the rarity and the distribution of the syphilitic lesions and concentrating attention only on the effects of the treatment, arsenobenzol has been shown to be inoffensive and effectual. Its activity is sufficiently shown by the rapid disappearance of old standing lesions which were obviously chronic; its innocuousness by the entire absence of untoward sequelæ in a pregnant woman whose general health was indifferent. It is to be noted, moreover, that in this case the patient was a syphilitic subject who had had previously manifested pronounced effects of the disease in her pregnancies and still had the disease during her last pregnancy; yet injections of arsenobenzol enabled her to carry on gestation to term in a normal manner.

**Syphilitic Exophthalmic Goiter.** H. F. L. Zeigel[6] reports the case of a 28-year-old patient who had one abortion at two months. The patient's attention was first attracted to the neck in August, 1911. For two years previously she had been more nervous and there had also been cardiac palpitation on exertion, visual disturbance, and difficulty in swallowing. Five months previously a lump was noticed on the external aspect of the left arm just beneath the shoulder. Later other hard areas appeared on the arm, behind the shoulder, on the anterior aspect of the elbow, and on the upper forearm. There was no pain, but occasional slight pruritus. She slept and ate well and did not feel weak. Defecation and urination were normal. The patient complained of annoyance due to hardness and discoloration of the skin, which had increased rapidly, also of "nervousness," headaches, visual disturbance, difficulty in swallowing, and cardiac palpitation on exertion. Physical examination in August, 1911, showed considerable

(6) Med. Record, June 4, 1913.

uniform swelling of the thyroid gland, moderate exophthalmos, presence of Graefe's and Moebius' signs, plus frequency of 96 to 100. No marked tremor. Extending from below the left cubital fossa upwards to the point of the shoulder, on the outer and front aspects of the left upper arm, and over the left scapula in the region of the spine, was a hardened condition of the skin, nodular in areas. The affected skin was discolored and furrowed, and in the central portions apparently longest involved it was slightly scaly. In some areas there was hard edema; here the skin could not be pinched up; it did not pit on pressure. Where most affected it was attached to the deeper tissues. The infiltration merged into the surrounding apparently normal skin. The color resembled somewhat that of ivory. There was no sclerodactylie, the skin of the lower forearm, hand and fingers not being involved. The pupils reacted normally. Ophthalmoscopic examination found the fundus normal. There was slight general enlargement of the lymph nodes. The breasts were negative.

Most of the nodules disappeared after salvarsan injections. Those that remain are softer and smaller than originally. The patient absolutely refuses any more injections. Her weight is now 179 pounds, *i. e.* a gain of 30 pounds since salvarsan was first given. The pulse frequency is 68. There is now very little swelling of the thyroid. Since the salvarsan treatment there has been no recurrence of the headaches, "nervousness," cardiac palpitation, and difficulty in swallowing. April 7, 1913: The luetin test and Wassermann test have been negative twice.

**Sudden Death of Luetic Infants After Birth.** Necropsies in luetic infants dying soon after birth give, according to Bonnet-Laboreria,[7] varied results. In many cases there are grave syphilitic lesions in the viscera, while in others most minute research shows no syphilitic signs. Still the *Treponema pallidum* can generally be demonstrated in the blood, showing a general infection. Some of these infants appear quite normal,

(7) Jour. des sciences med. de Lille, May, 1913.

and surprise the accoucheur when they do not breathe. There must be some special mechanism causing death which is active only just at the beginning of respiration. These infants have an exaggerated development of the abdomen, the internal organs having undergone hypertrophy. This condition has been called a glandular splanchnomegaly. In many cases there is, also, ascites adding to the distention of the abdomen. These enlarged organs make undue pressure on the contents of the thorax, and make it difficult for the lungs to be inflated when the infant should begin to breathe. The type of respiration in the new-born babe is abdominal. The thorax having little movement, therefore, the upward pressure of the distended abdomen will interfere with the respiratory action of the diaphragm. The cries and respiratory efforts of the heredo-syphilitic are feeble and last but a few minutes. In spite of the feeble efforts at respiration that are made no air enters the thorax, and death results. At autopsy the lungs are found in a state of atalectasis. The heart may beat for several minutes after the respiratory efforts have ceased. The efforts to establish respiration fail. In cases in which the abdominal organs are not markedly enlarged and ascites is responsible for the distention, tapping of the abdomen and removal of fluid suggests itself as of value in relieving pressure.

**Syphilis and Circulatory Disease.** According to J. T. Halsey,[8] syphilis very frequently produces lesions of any portion of the circulatory system, particularly during the early stages. A routine Wassermann test should be and could be made in all such cases, nor is there any doubt that if this be done much unnecessary suffering and disease would be prevented. Those who treat syphilis in any stage, but particularly in the early phases, should be on the lookout for evidence of disturbed circulatory function. The co-existence of circulatory disease and positive or presumptive evidence of syphilis calls for energetic antisyphilitic treatment, and it cannot be too strongly emphasized that potassium iodide alone is not sufficient. Such patients must have

(8) N. Y. Med. Jour., Mar. 29, 1913.

mercury or salvarsan, the choice between which should be governed by various considerations.

**Syphilitic Aortitis.** T. Deneker[9] reports 173 cases. About half of the patients admitted syphilis and one had signs of inherited syphilis. The shortest period between infection and the aortic disease was five years; the longest, forty-four years; the average about twenty. No occupation or age seemed to be particularly affected. In fifty-three cases the nervous system was also affected. The mortality was large, some of the patients succumbing suddenly, others after a long course of improvements and exacerbations. In forty-six patients under observation for some time, the present condition is unmistakably more favorable in those who followed vigorous and persevering specific treatment. In this group is one workingman of 51 years who had severe pulmonary edema when first seen, but improved under treatment until he has regained full working capacity. Another patient is a merchant of 38 years whose left radial pulse was imperceptible for years, but, after several courses of treatment, returned. This group also includes a number of patients whose previous sickly aspect has changed to that of health as their seriously demoralized myocardium recuperated in surprising fashion. In his service at the public hospital at Hamburg, when inunctions were impracticable, Deneker gave Richard's combination of red iodide of mercury and sodium iodide. With this formula the dosage of mercury is so small that the first course should last three months. Deneker approves of Höfler's method of giving iodide alone when the Wassermann is negative; if positive, he combines mercury with it. Salvarsan cannot be given to patients with serious aortitis and, even with good compensation, great caution is necessary. Deneke seldom gives over 0.2 or 0.4 gm. and always with other measures at the same time. His personal impression is that a patient with a positive Wassermann on starting treatment is never safe from progress of his disease until the Wassermann reaction has become permanently negative. This result may require years or may never be attained; the best we can

(9) Deutsche med. Wochenschr., Mar. 8, 1913.

do then is to order as many courses of treatment as possible. Transient benefit is easy to realize in these cases, but permanent success is difficult.

Impress patients with the seriousness of syphilitic aorta disease and the necessity for vigorous treatment through months and years. The trouble is that the patient feels so much improved under a single course that he is heedless of returning for further treatment and he hears outsiders talk of "injury from mercury," so he does not return for further treatment until irreparable lesions are installed.

**Bladder and Urethral Syphilis.** Bicot[1] reports a case with a history of vesical calculus, which was removed and subsequent cystitis, retrovesical fistula and diarrhea. The cystoscope and urethroscope made the diagnosis. The Wassermann reaction was positive. Mercurial treatment rapidly cleared up the condition.

**Syphilis and Varicose Ulcers.** In most dermatologic text-books much is made of the diagnostic points that are to be observed in distinguishing between syphilitic and varicose ulcers of the leg. The character of the edge, the position of the ulcer, its shape and depth and the mode of healing are all to be noted before a definite opinion can be given. Pigmentary changes are quite common in varicose conditions, as well as in specific forms of ulceration. E. Zinsser and P. Philipp[2] have collected a series of 36 patients with varicose ulcer in which a positive Wassermann reaction was obtained in 28 cases. In a number of instances there was also evidence of periostitis of the tibia, as shown by radiographs. Only 8 of these patients presented any clinical signs or gave any history of syphilis. The opinion of Zinsser and Philipp is that some slight injury, working upon a chronically congested part, is capable of giving rise to an actual periostitis. In a considerable proportion of cases, then, it is obvious that the specific element would not have been recognized.

**Late Syphilis with Acute Polyarthritis.** W. Huzar[3]

(1) Gaz. des Hôp., Aug. 15, 1913.
(2) Deutsche med. Wochenschr., May 15, 1913.
(3) Wien. klin. Wochenschr., Aug. 7, 1913.

states that there are acute mutiple orthritides from syphilis in its late stages which resemble very closely acute articular rheumatism. Antisyphilitic therapy is advised in all cases resistant to antirheumatic treatment.

**Syphilis of the Nervous System.** J. McIntosh and P. Filder[4] make two main divisions—one largely or entirely confined to the lymph vascular tissues and the other largely or entirely confined to the brain substance. In each of these two divisions varying number of spirochetes and, even more so, varying sensitisation of the tissues will occasion lesions of varying clinical importance. In the vascular tissues these will range from a slight meningitis to a gummatous process, and in the brain from a slight meningo-encephalitis to tertiary encephalitis (dementia paralytica). The cases now recognized as encephalitis (Wassermann reaction and discovery of the treponema) were formerly not recognized as syphilitic. The "cerebral syphilis" of the literature is practically confined to the gummatous processes. Further, since the patients are susceptible to treatment, a post-mortem examination is a rare occurrence. It is nevertheless, certain from the rich clinical material and wide experience of Dr. Head and Dr. Fearnsides that the syphilitic states we have referred to are common.

**Treponema Pallidum in the Brain in General Paresis.** The long existing controversy as to the etiology of general paresis appears now in a fair way to be cleared up. The previous conceptions as to its pathogenesis—(1) that it is a late effect of the toxins of the treponema, or is due to a metamorphosis or different cycle of the organism, and therefore should be called parasyphilis; (2) that it is due to endogenous or exogenous toxines produced by syphilis in distant organs; (3) that it is the late result of our medicinal treatment for syphilis, particularly the use of mercury; (4) that the lesion is entirely independent of syphilis, which is only an adjuvant or casual factor—these previous conceptions must give way now, apparently, to the view that general paresis is due to the direct action of the treponema and its products on the tissues of the brain.

(4) Lancet, September. 27, 1913.

H. Noguchi and J. W. Moore[1] have succeeded in finding the *Treponema pallidum* in 12 out of 70 specimens from paretic brains. The specimens in most of the cases were taken from the first right frontal gyrus; in some from the left hemisphere or gyrus rectus. The stain used was the Levaditi silver method modified in certain respects to produce an elective stain for the pallidum.

All possible care was taken to select cases which were clinically typical and classic cases of general paresis. The post-mortem findings in the brain in every case were definitely those of general paralysis. Ten were men and two were women. In seven cases in which the onset could be satisfactorily determined, the average duration was 17 months, the longest 30 months, and the shortest 5 months. The majority were much below the average duration, which varies from 24 to 32 months. It is possible, then, that we are more apt to find the spirochete in those cases which run a fairly rapid course. The age varied from 33 to 60 years with an average of 44 years. Brief abstracts of the case records are given and a careful description of the gross and microscopic appearance of the brains in order to demonstrate that the characteristic paretic changes were present.

The spirochetes were found in all layers of the cortex with the exception of the outer or neuroglia layer. One spirochete was located at the border of this layer but not within it. A few were found subcortically. Careful search of the pia failed to reveal any of the organisms. In all instances they seemed to have wandered into the nerve tissue. They were not found in the vessel sheaths and seldom in close proximity to the larger vessels. There seems to be no ratio between the number of the spirochetes and the severity of the paretic process, although the case in which they were most numerous showed excessive paretic changes.

[The extensive verification of the work of Noguchi and Moore, both here and abroad, and the wide acceptance which their views already have obtained, makes this research one of the notable American contributions of

(1) Jour. Exp. Med., February, 1913, p. 232.

recent times and one of which American medicine may be proud.—Ed.]

**Treponema Pallidum in Tabes.** Noguchi[5] has continued his studies on the treponema in tabes and general paralysis. He has now examined a pathologic material of 200 paralytic brains and 12 tabetic cords. He was able to demonstrate the treponema in 48 of the 200 brains, but in only one of the 12 cords. Therefore, although paresis and tabes offer no histologic characteristics of syphilis, the etiology is evidently syphilitic. It may be the toxic products of the spirochete or some further stage of development of the spirochete, perhaps the finely granular stage, which is the cause of these pathologic changes. In the brain the regions found chiefly affected are the gyrus frontalis, the gyrus rectus, and the Rolandic region. It is these regions which showed the most spirochetes. Occasionally one of the pyramidal cells is seen surrounded by one or more spirochetes. Important for the demonstration of the spirochete is long and complete fixation of the rather thick specimens in formalin. The duration of this fixation is usually around a year. A good stain shows all the tissues pale yellow or yellow-brown and the spirochetes a dense black. The specimens from the spinal cord are cut in a longitudinal direction. The tissue changes in the brain should be considered a chronic encephalitis due to the spirochete.

**Syphilis Complicating Typhoid.** P. G. Skillern[6] records the case of a 40-year-old Finnish sailor who came under his care Oct. 7, 1912. Sept. 12, 1912, the man became ill with fever, malaise, diarrhea, loss of appetite, headache, and abdominal soreness. On admission he no longer complained of these symptoms, but said that he felt very weak. An eruption appeared on the body two weeks after the onset of the illness and remained.

Ten years previously he had contracted a chancre. He was a heavy drinker and smoker. After leaving Bombay he had a fever which lasted four weeks. Examination

(5) Jour. Cutan. Dis., August, 1913.
(6) N. Y. Med. Jour., Mar. 8, 1913.

revealed a very profuse maculopapular eruption over most of trunk, arms and legs, as well as on the hands and feet and left cheek. This rash had the "boiled ham" appearance and symmetrical distribution of a syphilitic roseola, and did not disappear on pressure. Lymph nodes palpable were the anterior and posterior superficial cervical, supraclavicular, left epitrochlear, and inguinals. An ancient scar, circinate in outline, was found posteriorly over neck and upper part of back.

Clinical examination of the blood gave a positive Widal reaction and a weakly positive (one quarter unit) Wassermann. Smears from the spots examined under dark field illumination showed no spirochetes. Cultures from the spots made on October 15 gave a pure growth of typhoid bacilli, which agglutinated with serum from a known case of typhoid. A blood culture taken on the day after admission proved sterile.

On October 14, a week after admission, the eruption was fading, leaving a grayish discoloration and on November 8, the day of discharge, the spots on the abdomen were very faint indeed. At no time during his stay in the hospital was the temperature over 100° F.

**Hepatic Lues and Actinomyposis.** H. D. Rolleston[7] reports a case in a 29-year-old rag sorter who in 1904 had syphilis and in 1909 a fall on the right side. About June 1, 1912, a burning pain began in the hepatic region, and about June 10 he noticed a swelling in this situation. On admission there was a firm tumor, measuring 3 in. by 2½ in., below the right costal arch, fixed so that it did not move with respiration. There were old scars on the face and neck and an enormous white serpiginous scar over the front of the chest. The spleen was not palpable. The urine contained albumin. The heart and lungs were normal. As the Wassermann reaction was strongly positive and he had irregular fever, the condition was thought to be gummatous, and iodides were given. The tumor softened, and on being incised on June 30 gave exit to pus containing streptothrix mycelium. On July 18 the abscess was opened up and thoroughly scraped. Shortly after this operation there

(7) Med. Record, June 21, 1913.

was a small hematemesis which contained actinomycotic granules. The patient, who was not very tolerant of iodides, had various modifications of them and had also an autogenous streptothrix vaccine administered. The liver is still much enlarged, and there are the scars of sinuses which from time to time discharge pus containing a Gram-positive streptothrix with well developed clubs; some of the mycelia resemble streptococcus chains. The urine constantly contains albumin, the temperature is irregular and the liver has tender spots.

DIAGNOSIS.

**Cutaneous Reaction.** Noguchi, as J. M. Wolfsohn[8] points out cultivated spirochetes with the maintenance of strict anærobiosis, thanks to the property possessed by *Spirochæta pallida* of migrating in solid media in which it is multiplying. The culture media used consist of ascitic fluid containing a piece of sterile placenta and ascitic fluid agar containing a piece of placenta.

The organisms are grown for from 6 to 50 days. After sufficient growth has taken place the tissue is removed and the solid medium and organisms are ground up in a mortar and diluted with the ascitic fluid culture. The mixture is then heated for 60 minutes at 60° C. and 1 per cent tricresol is added as an antiseptic. Noguchi has called this final sterile emulsion "luetin," and it is this preparation which was used in the tests reported in this paper.

As Noguchi points out: "Pure cultures of the *Treponema pallidum* offer many advantages, because not only are pallida of different ages present, but also their metabolic products," which are important factors in establishing an allergic state in syphilitic subjects.

Both arms of the patient are cleaned with 95 per cent alcohol; 0.1 c. c. of the luetin is injected intradermally into the left arm over the biceps muscle and the same amount of the control emulsion (which consists of the media only and no pallida) is similarly injected into a corresponding site on the right arm. Observations are

(8) Amer. Jour. Derm., October, 1912.

made daily thereafter over a period of twelve to thirty-six days. To insure the sterility of the emulsions, cultures from them are frequently made. Every patient upon whom the luetin test is tried has a Wassermann reaction done on his blood serum and also upon his cerebrospinal fluid, when this latter is indicated. Very few reactions present any difficulty in interpretation, *i. e.*, practically all the reactions are definitely negative or positive.

In the majority of cases, 24 hours after the injection, the skin in the injected arm shows a slight blush, and a moderate induration or papule formation. Very seldom is any tenderness or itching complained of except in the cases showing positive reactions. Almost invariably, after 48 hours, the injected site is free from induration and erythema; a pinpoint ecchymosis or perhaps a small yellowish pigmentation alone remain. If the patient has irritated the site of injection, a small pustule may form, but this latter has developed only in two of the control cases and has not given rise to confusion in interpretation.

Though the type of reaction in positive cases varies greatly, in general the gross characteristics are induration and erythema. In analyzing the various types of reaction found in the different stages of syphilis, the following classification includes all the essential varieties.

*The Papular Form.* Arising at the site of the injection within 24 hours an indurated papule develops which varies from 5 to 15 mm. in diameter, is surrounded by more or less erythema and is usually quite tender. The reaction gradually increases in size until the third or fourth day, when it either regresses or develops into the pustular form. The control injection (in the other arm) usually shows no reaction after 24 to 48 hours.

*Vesicular Form.* This variety is generally seen in cases where a moderate reaction rapidly follows the injection, and it occasionally appears as a bleb, but more often as a group of small vesicles superimposed on an indurated, tender base. As a rule, the vesicular passes into the pustular variety.

*Pustular Form.* This type may be primary or sec-

ondary. When primary, it occurs usually in association with the violent reaction seen in latent or in late tertiary stages of syphilis where no treatment has been previously administered. When secondary, it occurs late in the papular form or develops early from the vesicular stage. The pustules usually rupture spontaneously with subsequent crust formation.

*Torpid Form* of Noguchi. In a few latent and parasyphilitic cases a week after all evidence of reaction at the site of the injection has subsided a hemorrhagic pustule appears, which, when opened, exudes a semi-fluid gumous hemorrhagic material. In many of the parasyphilitics showing vascular luetic lesions for from 3 to 7 and even 28 days following the injections the reactions are quite negative; but the site of the injection, after this period of quiescence, possesses a bluish-red tinge and a smaller or larger infiltrated papule is felt. This papule soon increases in size, is not tender, and in the 2 or 3 days following develops into a pustule, after which there is a regression of the reaction. In these cases the control injection site shows nothing abnormal.

In brief, the reactions may be said to be (1) mild, (2) violent or (3) torpid, according as the signs (1) slowly develop to a maximum and regress; (2) start in violently reaching an early maximum, which is maintained for 24 to 72 hours, and then subside; or (3) develop late, show only a mild reaction after the latent period, and never become marked.

In no case did scar formation occur after local manifestations subsided, but in many instances there was more or less pigmentation, according as the site of injection was markedly hemorrhagic or not. Of the seventy control patients who were suffering from diseases other than syphilis, *e. g.*, soft chancre, mitral insufficiency, myocardial insufficiency, cancer of the tonsil, acute rheumatic fever, pregnancy with still-born infant, senile palsy, bronchitis, brain tumor, diabetes mellitus, pleurisy with effusion, pericarditis, hypophysis tumor, pernicious anemia, epilepsy, peliosis rheumatica, sarcoma of the ileum, myelogenous leukemia, carcinoma of the stomach, thyroid cyst, pulmonary tuberculosis, chronic nephritis,

rickets, chronic constipation, gastric ulcer, uremia, typhoid fever, infectious arthritis, etc., when no history of syphilitic infection could be obtained and where the Wassermann reaction was negative in each case, no positive luetin or control reactions were obtained. In two cases small non-indurated pustules developed within three days after the injection, but these lesions easily could be distinguished from the positive reactions. No constitutional symptoms were complained of or noted in these cases.

No opportunity as yet has been afforded to try this test on patients suffering from primary syphilis. Two cases of secondary syphilis both in the maculo-papular stage, were inoculated. In each case the Wassermann reaction was positive and each patient was given 0.4 gm. of salvarsan intravenously 24 to 48 hours before the test was made. Both tests were positive. In the first case the salvarsan had been administered only 24 hours before, but the reaction to the luetin, although delayed till the fifth day, was definitely positive. No constitutional symptoms or reaction at the site of the control injection were noted.

This series includes six cases of which the Wassermann reaction was positive in five. The sixth patient had 0.6 gm. of salvarsan one year before admission and his test proved negative both with blood serum and cerebrospinal fluid at this time. The Wassermann reaction was positive in the previous year, however. The luetin reaction in this case was positive. In the first case of this series the luetin reaction was negative though the Wassermann was positive. This case was not followed longer than ten days.

The reaction in four cases of luetic periostitis was of the violent variety and showed early pustule formation and rather marked reaction on the control side. Two of these patients complained of tender and painful arms and one developed enlargement of the axillary glands. All these manifestations disappeared in 24 hours. In one patient two weeks after subsidence of the local manifestations there was a flare-up at the site of the injection of the luetin. A pustule formed and rapidly dis-

appeared, leaving no other sign than slight desquamation and pigmentation.

Included in this series are nineteen cases, seven of which are of central nervous system affections and twelve of cardiovascular disturbances. A careful analysis of these cases shows the great value of the luetin test. Of the former cases all seven gave markedly positive tests, while the Wassermann test was negative in six. One of these patients, a tabetic, had a positive Wassermann reaction one year previously and had had in the interim three doses of salvarsan; but the cerebrospinal fluid still gave a positive Wassermann test. The luetin reaction in this case was violent; the reaction over the site of the control injection was especially noticeable, as it was also in five of these cases.

Another tabetic, who showed no other signs than diminished knee kicks and sluggish pupils, developed remarkable constitutional symptoms, beginning 30 hours after inoculation and lasting four days. These symptoms consisted of fever as high as 103° F., pain in the abdomen resembling crises, nausea and vomiting. The reaction was violent. The Wassermann test was negative, both for the blood serum and cerebrospinal fluid. The patient had never received treatment previous to this time.

Of the twelve parasyphilitics showing cardiovascular lesions, eleven gave positive luetin reactions and one reacted negatively. Only seven showed positive Wassermann reactions. The one case giving a negative luetin test had a positive Wassermann reaction. But six of this series giving negative Wassermann reactions gave also positive luetin tests. It is in this group of cases that great care must be exercised, as one might readily consider the test negative if it were not watched for for some time. Six of these twelve cases showed reactions of the torpid form, no sign of the reaction appearing until the ninth day, and one case of abdominal aneurysm gave no manifestation until the twenty-eighth. The luetin test proves of great value in this type of cases, if properly followed, because the Wassermann tests are relatively inconstant.

Latent syphilis shows a wonderful constancy of results with this test. In the 23 cases of latent syphilis tested all give positive reactions. The Wassermann reaction in this series was positive only in ten cases. In three of these cases the Wassermann reaction with the cerebrospinal fluid was also negative.

Some individuals included in this group denied having contracted syphilis; but after the luetin test was found positive in several instances the patients confessed having had a primary lesion or secondary manifestations. The test was applied in four cases of pregnancy, three of which were terminated by the birth of macerated fetuses and the fourth at term by a still-born infant. All four patients denied infection. The three former patients reacted "violently" to the luetin and showed "*umstimmung.*" The Wassermann reaction was positive and a diagnosis of syphilis in the infant was made in each case. The fourth case gave a negative luetin reaction, the Wassermann reaction was negative and no signs of syphilis could be discovered in the dead infant. No constitutional disturbances were noted in these cases. Of the remaining nineteen cases in this series, nine showed reaction. One patient suffering from carcinoma of the head of the pancreas, who had a chancre in 1865 showed a delayed luetin test, but gave a negative Wassermann reaction. Constitutional symptoms consisting of tender axillary glands, tender arms, tachycardia, abdominal pains, bone pains, and nausea were present in four of the cases, but these symptoms were usually of only from 24 to 48 hours duration and caused no alarming discomfort to the patient. One patient showed a secondary hemorrhagic pustule two weeks after the first manifestation had subsided.

Thus latent syphilis, so difficult to diagnose clinically, and in which the Wassermann reaction is not of assistance in more than from 40 to 70 per cent of the cases, shows a positive luetin reaction in all the cases tried.

**Resistance of Luetic Red Cells to Cobra Venom Hemolysis.** Normal red cells (4 per cent suspension) plus varying dilutions of cobra venom of from 1 to

70,000 to 1 to 80,000 showed hemolysis in twenty-four hours. With luetic cells hemolysis was retarded or absent in dilutions varying between 1 to 15,000 and 1 to 40,000. The lecithin of luetic red cells is apparently not so freely available to unite with cobra venom to produce hemolysis as is the case in normal red cells. The resistance of luetic red cells to hemolysis with cobra venom was first described by R. Weil in 1909. It is a well known fact that syphilis attacks the lipoid constituents of the body cells since less lecithin can be extracted from syphilitic tissues than from normal tissues. Apparently the luetic toxin after seven to eight weeks so affects the lecithin of the red cells as to render it less available for uniting with cobra venom; the cells therefore appear more resistant. Possibly the cholesterin content of luetic red cells is increased, which might account for the resistance to hemolysis with cobra venom. It is well known that cholesterin can inhibit hemolysis. The reaction had been made the basis of a test for lues by W. J. Stone[8] in 112 cases of syphilis. It was found that in secondary cases after 7 to 8 weeks the reaction is positive in 87.8 per cent, while in tertiary syphilis the reaction is positive in 83.4 per cent. In eighty normals and controls, including typhoid, purpura, diabetes, cancer, tertian malaria, pseudoleukemia, biliary cirrhosis with jaundice, and many exanthemata, the reaction was negative in all but one, a patient with a transient morbilliform erythema. This was the first test made and may have been due to faulty technic, or the patient may have had latent lues. Stone has never been able to check up by further examination of this patient. The reaction appears to have a sphere of usefulness in latent syphilis, since the positive readings were considerably higher than with the complement-fixation method of Wassermann. It was also of value in determining how long to continue treatment, since the cobra venom reaction in a large percentage of cases remains positive after the Wassermann reaction has become negative. The cobra reaction which disappears after treatment may again become

(8) Urolog. and Cutan. Rev., October, 1913.

positive if the treatment has been insufficient. The test is open to fewer technical difficulties than the Wassermann. In any case the resistance of luetic red cells to cobra venom hemolysis is an extremely interesting biochemical phenomenon and may be of value where the Wassermann test fails.

**The Luetin Test.** Ferdinand Schmitter[9] has examined a hundred and fifty cases with luetin obtained from Noguchi. In cases in which the luetin test is positive but the Wassermann negative, the Wassermann should be repeatedly done, and in such cases a positive Wassermann often appears sooner or later. There appears to be no definite relation between the time of development of the pustules and the particular phase of the disease. Only the pustule is considered characteristic of the reaction, even though it be not superficial every time. Fifty-five per cent. of fresh cases and 90 per cent. of old cases give positive results. Salvarsan treatment did not appear to have any influence on the luetin test. Schmitter comes to the conclusion that the luetin test, like the Wassermann, when properly done and properly judged, especially in connection with the clinical findings, is a valuable diagnostic help.

## Treatment.

**Mercury by Mouth.** Patients who refuse intramuscular injections D'Arcy Power[10] has found the following mixture less nauseous than that usually prescribed, both the metallic flavor of the mercury and the acridity of the iodide being successfully masked:

I

℞ Hydrargyri chloridi corrosivi..
Ammonii chloridi ..... } ana. gr. ss
Potassi iodidi ..... 3i
Syrupi ..... 3i
Mucilaginis tragacanthae ..... 3ii

(9) Jour. Cutan. Dis., Vol. xxxi, August, 1913, No. 8.
(10) Clin. Jour., May, 1913.

Olei amygdalae amarae (sine HCN) } ana. m. ii
Olei cinnamoni ..... }
Aquae chloroformi, q. s. ad .....3viii
M. ft. mistura.
Sig.: Take an eighth part three times daily.

II

℞ Hydrargyri chloridi corrosivi... } ....ana. gr. ss
Ammonii chloridi ..... }
Potassii iodidi .....3i
Fluidextracti chiratae .....m. xii
Benzosulphinidi .....gr. ii
Infusi gentianae compositi, N. F., q. s. ad.3viii
M. ft. mistura.
Sig.: Take an eighth part three times daily.

The first preparation is for those who like sweet tastes; the second, for those preferring bitter.

**Distilled Water in Syphilis.** G. Arbour Stevens[1] states that the value of mercury in the colloidal form as an antiseptic rests on its possessing the powers of both classes of antiseptics—the power of the heavy metals to combine with protein matter, and the power to modify the surface tension of all living cells. In some experiments made to determine the surface tension of individual substances, it was found that colloidal mercury, as well as mercury perchloride and phenol, have a tendency to reduce the surface tension existing between mercury and potassium chloride, and the fall is not complete at once, but is progressive. This fact is important, for, with such a varying degree of tension around living cells, the latter find it difficult to accommodate themselves to their surroundings; and, as the result of their failure to do this, their lives cease. The addition of boiled yeast to living yeast in a suitable medium stimulates the living yeast to marked activity, to a rapid life and, therefore, to an early death. Similar increase of activity is seen in the case of the addition of boiled bacteria to cultures of living ones. Both of these phenomena are due to changes in the surface tension, which

(1) Brit. Med. Jour., Apr. 5, 1913.

is in the nature of a lowering. This lowering of the surface tension is associated with a more rapid production of catalytic products in the cells. The injection of vaccines is associated with the production of antibodies. Therefore, it seems that production of antibodies is closely associated with reduction of surface tension. In disease, rapid catalytic changes and rapid production of antibodies are interdependent. If one can induce such marked catalytic changes with or without a vaccine, there is a chance of liberating useful and remedial antibodies. In chronic disease the absence of a sufficient number of antibodies seems to be the cause of the continuation of the disease. In the absence of any vaccine to induce catalysis and increase the antibodies, the injection of distilled water was thought of. Stevens seems to have obtained good results, particularly in syphilis.

### Salvarsan.

This drug, according to M. Eliasberg,[2] can cause dangerous and even fatal complications. It has not been a marked success in aborting syphilis. Those patients treated with it are to be held latent syphilitics. While it may cause rapid disappearance of symptoms, it may also add to the refractoriness of the disease. It is a symptomatic not a radical curative remedy. The mercury-iodide treatment is preferable for the average patient.

**Accidents.** According to W. T. Corlett,[3] there are

1. Those accidents coming on very shortly after the injection with symptoms of an acute intoxication and necropsy findings of serous meningitis, hemorrhages, and frequently lesions of the kidneys and liver, lesions such as one finds in experimental arsenic poisoning.

2. Those coming on in from two to four days with symptoms of nerve paralyses, at times deafness, dizziness, poor hearing and even loss of consciousness, due to the Herxheimer reaction. This reaction is explained as the killing of the spirochetes with consequent freeing of

(2) Derm. Wochenschr., September, 1913.
(3) Jour. Amer. Med. Assoc., Sept. 20, 1913.

their toxins, and resultant edema and swelling of the parts affected, causing severe damage in such uncompressible tissues as the brain or nerves running through an osseous foramen.

3. Those coming on within from several weeks to months after the injection with symptoms of nerve paralysis and to be classed (1) as a "neuro-exacerbation" or "neurorechute," in which there is the lighting up of a hidden process already working or (2) as a neurorecurrence, "neurorecidive," in which there is a genuine starting up of a new lesion. Both these processes while luetic in character are associated with the arsenic preparations at least as to time and mode of their appearance.

**Dangers of Oily Injections.** H. H. Hazen[4] has given 58 of these injections to 44 individuals. Fifty-two injections were of salvarsan and 6 of neosalvarsan. In general the effects on the lesions and on the Wassermann reaction were excellent. In the majority of instances the immediate results, so far as pain and disability are concerned, have also been excellent. Twenty of the injections were practically painless, and only 12 caused pain that was at all severe. Morphine was required in but 3 instances. Only 3 patients lost time from work, one about ten days and the other two not over two days each. There has not been a single patient who was not willing to take another injection.

There is a more serious side, however, especially when the patients are followed for a considerable length of time, and some of the immediate evil consequences cannot be ignored. Four cases presented complications shortly after injection; two developed slight abscesses of no particular import; one developed peripheral phlebitis about two weeks later; but the most serious accident was pulmonary embolism, the patient fortunately recovering in about two weeks. In six instances abscess at the site of injection developed in from 3 to 24 months after treatment. In one of these patients both buttocks broke down about three months after injection, although the injection was unilateral. In this case it is rather dif-

(4) Jour. Amer. Med. Assoc., May 24, 1913.

ficult to hold the salvarsan responsible for either side. In the most interesting case of this series exactly two years after the administration of salvarsan an abscess pointed in the buttock. It was opened, and about 6 ounces of sterile pus and considerable tissue debris were evacuated. In another case five small injections were given at biweekly intervals without any especial trouble, but about three months after the last both buttocks became red, swollen and painful, with distinct fluctuation. Operation was refused, and the swellings resolved in about two months; but even now, one year later, they are still sore and tender on pressure. Several others have told Hazen of similar experiences, the longest interval between injection and abscess being one year. One other patient has had permanent nodules left in his buttocks, and complains bitterly of pains radiating down both sciatic nerves.

It is rather difficult to account for this late trouble except on the hypothesis that the material injected is toxic to tissue at the site of injection, and that this dead tissue, if not absorbed, may act as a foreign body. In the abscesses that Hazen opened no trace of salvarsan could be found. In all the therapeutic effect had been marked.

After the use of neosalvarsan in water, as recommended in the circular accompanying the ampule, one must be prepared for severe pain. One patient was rendered absolutely helpless for three weeks. Nor does the administration of neosalvarsan in glycerin, as suggested by Wolbarst, work any better; both of the patients on whom it was tried suffered severely. Oily injections of neosalvarsan are more painful than those of salvarsan. One tabetic had four treatments with salvarsan without the slightest discomfort, but the newer preparation kept him in bed for ten days. Out of six injections three patients experienced great discomfort.

In view of the tendency for late abscess formation following oily injections, and in view of the pain of all other methods, Hazen feels that the intravenous method should be the only one employed, remembering, of course, that it should be used very carefully in certain cases,

notably patients with disease of the heart or central nervous system.

**Contraindications.** According to Judson Deiland,[5] they are: Advanced syphilitic myocarditis, advanced syphilitic disease of the aorta or coronary arteries or aneurysm, syphilitic aortic insufficiency, hemiplegia from ruptured syphilitic artery, advanced general paresis, advanced disseminated sclerosis, advanced tabes dorsalis, extreme debility or emaciation. A number of deaths have followed its administration. Reports of autopsies are most instructive. Some patients were moribund when injected; one was over-worked physically the day after the injection and died a cardiovascular death. Most of the deaths, however, were due to advanced syphilis of the blood vessels, more especially the aorta, with aortic insufficiency and syphilitic myocarditis. In about one-half of these cases these pathological conditions were not recognized during life. It is, therefore, evident that in all cases of long-standing syphilis a complete physical and general examination is necessary. One death occurred in a case of terminal diabetes mellitus, although benefit may be expected in early cases, syphilitic in origin.

The contraindications are cardiac and aortic disease, according to E. Beck.[6] Acute nephritis, except of the luetic type, is an absolute contraindication. Ulcerative conditions of the stomach and duodenum, and acutely swollen or cirrhotic or atrophic liver point to the need for care in using salvarsan. Other conditions adding to the danger of salvarsan are marked progressive degenerative changes in the nervous system, especially when arteriosclerosis is present. Diabetes and general marked obesity should be remembered as adding a dangerous element to salvarsan therapy.

**Intolerance Signs.** According to D. Milian,[7] these signs are: Intractable vomiting, a scarlatiniform erythema, and jaundice. The latter are far more delicate of appreciation and these may be divided into three

(5) University Med. Monthly, July 15, 1918.
(6) Ann., Otol. Rhin. and Laryng., March, 1918.
(7) Münch. med. Wochenschr., Apr. 18, 1918.

groups: (1) Those actually contemporary with the injection; (2) those occurring as an immediate reaction, and (3) those occurring later. It is to the first that the author draws special attention in this article. They comprise (a) gustatory sensations, (b) various glandular secretions. The first-named small signs of intolerance consist of a taste of ether, or of salt, a slightly alliaceous flavor, which is experienced by the patient at the very commencement of the injection, sometimes even after only 2 or 3 c.c. of the liquid have been injected. At the moment when the taste is noticed, the pulse often will be found to be slowed. Neosalvarsan causes the same phenomenon, but less frequently. During the injection a hypersecretion of certain glands may, also, be noted, especially of the lachrymals. The patient sniffs slightly and then his eyes run with water. This lachrymal secretion may continue for several days after the injection. A salivary hypersecretion also may be observed, causing the patient to spit as though he were chewing tobacco. It is probable that this action of salvarsan is connected with its vaso-dilator properties. Other glands, such as the intestinal, the liver, the pancreas and the ovaries may also be influenced in a similar manner.

**Salvarsan and Yaws.** Frambesia or yaws, although seldom in itself fatal, is a disfiguring, unsightly, and repulsive affection. Many hold that it is of syphilitic origin, and from the manner in which it has been successfully treated by the same remedies which are effective in syphilis it would seem that this contention is correct. Now E. U. Reed[8] reports cases of frambesia in Samoa cured by the administration of salvarsan, a result which gives further weight to the evidence in support of the complaint being of syphilitic origin. From Sept. 1, 1911, to April 1, 1912, eighty-three cases of frambesia were treated with salvarsan at the naval station, Tutuila, Samoa. The drug was neutralized with 2 per cent sodium hydrate solution and injected into the muscles of one buttock. Complete and permanent cures are recorded in 53 cases. In practically all of these cases the yaws lesions dried up rapidly, the crusts fell off, and in 8 to 10 days

(8) U. S. Nav. Med. Bull., April, 1913.

the only traces of the disease were red discolorations of the skin where previously had been large elevated masses of tissue. The doses given for the different ages depend somewhat upon the severity of infection and the strength of the individual. According to Reed no syphilis has ever been recorded as contracted in American Samoa and he has seen no cases of syphilis among the Samoans after holding large clinics for over a year. This is possibly because they have become so thoroughly syphilized that the poison of the disease can produce only the milder lesion of yaws. Salvarsan has so greatly diminished the prevalence of the affection that children with large repulsive yaws lesions are seldom seen, whereas they were formerly a common sight.

## GENITO-URINARY MEDICINE AND SURGERY.

**Genito-Urinary Practice.** The principles are thus laid down by F. Cathelin:[1] Never pass a catheter the first time a patient is seen unless compelled. Never catheterize during an acute attack of gonorrhea. Never wash out the anterior urethra during an acute attack of gonorrhea. Never dilate when there is much resistance. Never cocainize the canal with peremptory reasons. Never omit rectal examination in urinary subjects. Always explore with a metal sound when a patient complains of pain in the glands. Always resort to cystoscopy in doubtful cases. Always resort to cystoscopy in hematuric patients at a suitable period. Always radiograph the upper urinary apparatus in renal cases with uncertain diagnosis. The tuberculous kidney is a small kidney: not palpable and not painful. Evening hematuria is always calculous hematuria. Never make use of silver salts in urinary tuberculosis. Tuberculous urine is never ammoniacal [except when secondary infection is present.—Ed.].

**Genital Disease in Diabetes.** C. W. Whitney[2] saw a man of 50, of irreproachable habits, who considered

(1) Monde Méd., April, 1913.
(2) Urolo. and Cutan. Rev., January, 1913.

himself in good health although somewhat overworked. Four weeks previous to the consultation, the patient noticed a small ulcer in the coronal sulcus on the left side of the penis. At about the same time, he observed a slight urethral discharge. As the ulcer did not heal, he consulted a physician two weeks later. A slide was taken, but showed only mucus and a few leukocytes. There had been no coitus in this case. The ulcer had slowly increased in size but was not particularly painful. As a matter of routine the urine was examined and found to contain 3 per cent of sugar. The patient was at once placed on a diet. When Whitney examined him two weeks later an ulcer was present the size of a split pea. It was circular and clean-cut, there was but little secretion, and it was not especially painful to touch. The base was distinctly firm and almost characteristically indurated over an area much larger than the ulcer. The inguinal glands, however, were not palpable.

A smear showed no treponema. In view of the absolute denial of any venereal exposure, this case presented a most perplexing problem. In three weeks he was somewhat improved and the urine was nearly sugar free. There was no roseola, no sore throat, no adenopathy, although about fifty days had elapsed since the appearance of the lesion, and the patient had received no treatment except for diabetes. The subsequent history seems to show clearly the non-venereal nature of the ulcer, for it gradually healed as the urine became free from sugar, and at no time during the four years elapsing since then has there been the slightest evidence of syphilis. The slight urethral discharge also disappeared within a few days as a result of a lessening of the sugar in the urine.

A man, 51 years old, married, consulted Whitney for an ulcer of the penis. There had been no suspicious coitus for two months. An ulcer existed on the under surface of the skin of the penis about an inch from the free border of the prepuce. It was circular, clean cut, with very little secretion, and neither tender nor painful. In spite of the long incubation, it was diagnosed as a beginning syphilitic chancre and the usual local remedies were prescribed. During the next two weeks, the ulcer

slowly increased in size, and became more tender and painful. At the end of another week, however, very severe pain began, the tissues became swollen and, in a few days, the skin presented a dark slough of quarter dollar size. Then, for the first time, the urine was examined and 5 per cent of sugar was found. Under a strict diet and soothing dressings the ulcer began to improve, the slough came away and at the end of four weeks healing was complete. The inguinal glands were not enlarged. Since then the patient has been under treatment for his diabetes and has not presented any symptoms of syphilis.

Male, 48, single, consulted Whitney for an ulcer of the penis the size of a thumb nail, situated under the left side of the penis close to the corona glandis. This ulcer had existed for eight weeks, and spread very slowly. It was rather painless and not sensitive. There was practically no discharge from it. The glands in neither groin were palpable. This lesion had been diagnosed a chancre at one of the large hospitals, and the patient was being watched for secondaries. Close questioning revealed a history of probable syphilis fourteen years before. Because of this admission, as well as from the fact that there had been no coitus for more than six months prior to the appearance of the ulcer, and from the absence of the characteristic induration, glandular enlargement, and secondary roseola, a diagnosis of tertiary ulcer (the so-called recurrent chancre) was made. The patient was given large doses of iodides and later red iodide of mercury in combination; but after six weeks of this treatment he was in no way improved. As he had lost flesh and did not feel in good condition, his urine was examined and found to contain 4 per cent of sugar. He was placed on a strict diet and his other medicines were stopped, as it was felt that his general condition was the most important. There was no suspicion that the two conditions were in any way associated. It was therefore a surprise to find that the ulcer slowly healed as the amount of sugar lessened until, at the end of six weeks, it was healed. The proof of the causal relation of diabetes in this case is the fact that no treatment, local or

general, was of the slightest benefit, but that, as the sugar lessened and the patient's resistance increased, the local lesion promptly healed.

Chancroid may occur in a diabetic patient and present nothing unusual in its course. The cases to be reported were simple diabetic ulcers resembling chancroids in appearance only, but differing widely in their clinical course. A young unmarried man of 22 years applied for advice in December, 1900. He had an ulcer of the free border of his prepuce, which had existed for six weeks. A marked degree of phimosis was present, which prevented any retraction of the prepuce. The ulcer had evidently begun in a laceration of the mucous membrane during coitus, for it was of a V-shape, both sides being infected. There was no discharge, no induration, and no glandular swelling. Its general appearance and the inoculation of contiguous surfaces suggested very strongly an indolent chancroid. Because of its situation and the marked phimosis circumcision was advised and arrangements were partly made for the operation when the urine was examined and a large amount of sugar discovered. The advice was very quickly changed and in ten days the ulcer healed under diet and boric acid ointment. Inasmuch as deaths have been reported from circumcision in diabetics Whitney was grateful that his case escaped the operation. The patient died in two years of diabetes, but developed no further ulcers.

A woman 40 years old, married, consulted Whitney in August, 1901, for vaginal discharge, which appeared a month previously. On examination the uterus was found greatly prolapsed, the cervix almost protruding from vagina. Upon it were four ulcers, one the size of a cent, the others much smaller. All of them were red and inflamed, the edges ragged, the bases uneven, and there was a marked discharge, which had irritated the whole mucous membrane. A smear was negative as regards gonococci. There was no pruritus vulvæ, nor were the glands anywhere enlarged. Various applications were made to the ulcers but no improvement was noted. Their true nature was not even suspected, as they resembled chancroids so closely, until the patient happened to com-

plain of thirst about three weeks after the first visit. The urine was examined and found to contain 3 per cent of sugar. The ulcers quickly healed under proper diet and mild local applications, and had not recurred up to a year ago when this patient was last seen. A fact which was observed in these two forms of ulcer was that the inguinal glands were not enlarged as they would have been in either chancre or chancroid. This observation should be kept in mind when an ulcer is found without the usual lymphatic changes in the adjacent glands. It may be a clue which will lead early to the proper diagnosis. Whitney has seen several cases of both chancre and chancroid in diabetics, and these lesions have followed their usual clinical course apparently unaffected by the constitutional disease.

A man, 22, married, came with a profuse purulent discharge and a series of small ulcers in the coronal sulcus. These ulcers resisted treatment, and did not heal until August 29, 1910. August 18, 1911, the patient again appeared with two small ulcers upon the inner surface of the prepuce, developed one week after coitus. These ulcers were treated in the usual manner and were apparently well Sept. 2. Three days later they returned. He was first seen by Whitney Oct. 3. Many applications were tried, especially of iodine. While these ulcers would almost heal over, yet they would return in a few days as large as ever. There was no induration, no history of syphilis, and the inguinal glands were not enlarged. October 27, bearing in mind the cases cited, the urine was for the first time examined for sugar which was found present. Under proper diet the ulcers promptly healed and have not returned.

A purulent urethral discharge, of moderate amount, is not very commonly seen in diabetes, but it does occasionally happen, as for instance in the case of ulcer cited above. When it is present it is of the muco-purulent type, being rather scanty in amount, and is a urethritis of toxic origin due to the glucose in the urine. There is no dysuria and the symptoms quickly subside under diabetic treatment. Occasionally the symptoms are more severe and, when associated with phimosis, may

easily be mistaken for gonorrhea. The following two cases are of this type; in both of them Whitney failed to diagnose the true condition at the onset of the symptoms.

A man, 56, married, liquor dealer, consulted Whitney in March, 1906, for a profuse subpreputial discharge. He strenuously asserted that there had been no extra-marital coitus. On examination phimosis was present, the prepuce was markedly swollen and reddened and from the orifice there was a very profuse discharge of pus. The meatus could not be seen. A slide was prepared but showed only the usual myriads of organisms peculiar to balano-posthitis. No gonococci were found. Nevertheless, it was considered most probably gonorrhea and was treated with oil of sandalwood and a subpreputial injection of potassium permanganate. He did not return for six months and then he came stating that the former symptoms quickly subsided and there was no return until within a few days. The patient now showed less phimosis, a slight subpreputial discharge, but none from the meatus, which now could be seen. At this visit he complained of some loss of flesh and strength, a moderate thirst; on examining the urine there was found about 4 per cent of sugar. Diet and a mild wash cured the local symptoms. There was no return. He died of gangrene of both feet a year ago.

A man, 45 years of age, came in January, 1909, with the history of a relapsing subpreputial and urethral discharge of fairly profuse character. He was married and had never had any venereal disease. His wife was perfectly well, and had no local symptoms. His case was much like the previous one, a moderate phimosis with purulent subpreputial discharge and a little from the meatus but without gonorrheal organisms. He was given symptomatic treatment on his first visit, the true nature of the affection not being suspected. On the second visit his urine was examined and 2 per cent of sugar was found. Since seeing this patient, it has been Whitney's custom to examine the urine in all similar cases and in two more cases it was found to contain sugar, but in very many more sugar was absent, the cause being local.

Whitney has seen many cases of gonorrhea in diabetes;

while the course may have been a little more protracted than the ordinary case, it was not notably so.

Balano-posthitis is one of the most frequent lesions of the genito-urinary organs in diabetes and is about the only one mentioned by the text books on the subject. It is analogous to the pruritus vulvæ, which is so often an early symptom in women. Its appearance differs in no way from the pruritus due to other causes, but its occurrence in men of middle age without venereal history should lead to a suspicion of its cause.

A man of 65 years, who had diabetes for several years, came to Whitney in December, 1902. His most annoying symptom was an itching and burning under a rather tight prepuce. When the prepuce was retracted the mucous membrane was found to be fiery red, exquisitely sensitive with small ulcers scattered here and there over it. He was relieved by antiseptic washes and zinc stearate, aided by a strict diet. He was under care until his death, in 1907. These attacks recurred whenever he was careless about his diet and his sugar content went above 3 per cent.

Sometimes the ulcers in such cases are very deep. A few cases of gangrene have been reported. While diabetes may occur in an individual who has a congenital phimosis, the form usually seen is the inflammatory phimosis, produced by the condition just described, balano-posthitis.

It is rare in the very young. In all adults the urine should be examined in every case where a circumcision is advised lest the disaster of gangrene and death should occur as it has in the past. A phimosis may be present, inflammatory in type, due to retained smegma, to chancroids, to herpes, or to vegetations, and have no causal relation to the diabetes; but the resistance of the diabetic is so slight that his condition after an operation may be far worse than before it.

Eczema of the penis is a lesion next in frequency to balano-posthitis and usually is of the dry and scaling form. It often closely resembles the squamous lesion of syphilis as the following case illustrates: W. R., 52 years of age, single, was seen in April, 1905. He acquired

syphilis a year before, but was under the care of another physician and reacted well to treatment so that he showed nothing on his body or upon the mucous membrane. Examination of his urine showed neither albumin nor sugar. During the next three years he remained under treatment and showed an occasional squamous lesion of the forehead and scalp, which cleared up quickly under mild mercurial ointment. At the end of this period a large squamous patch appeared upon the right side of the scrotum, sharply defined from the surrounding normal skin. It was so typical of a late syphilide that Whitney instituted more vigorous treatment with mercury and iodides with local mild mercurial ointments. No improvement resulted. Because of this fact and thirst of which he complained at about the same time, the urine was examined and 3 per cent of sugar was found. Under a strict diet and soothing ointments the lesion disappeared, but during the two remaining years of his life it constantly recurred whenever the sugar content rose above 2 per cent. This lesion was clearly diabetic, and not syphilitic, because treatment for the latter condition never affected it in the slightest.

A 68-year-old married man was seen Nov. 27, 1912. He denied previous venereal diseases and extra marital coitus. About six months previously he had used a towel, first used by his wife, who had eczema, to wipe his penis. One week later he noted an irritation of the prepuce followed by swelling and an inability to retract it. He received various forms of treatment but steadily grew worse. At the time of his visit the skin of the anterior portion of the penis was covered with a scaling eruption, the tissues were swollen and tender, producing an inflammatory phimosis. Several fissures were present at the free border of the prepuce, which closely resembled chancroids. The inguinal glands were not enlarged, and the skin and mucous membranes elsewhere were normal. A provisional diagnosis of diabetes was confirmed by examination of the urine, which showed sugar in large amount.

C. K., a 47-year-old bachelor, consulted Whitney in November, 1912. He acknowledged several attacks of

gonorrhea but denied any other venereal disease. His present ailment, which began a day after coitus, had existed three weeks. The skin of the penis showed a scaling eczema of one side with moderate swelling of the tissues and at the free border of a rather tight prepuce were two small ulcers or fissures. The inguinal glands were not palpable. From the length of time these lesions had existed without growing larger, and from the peculiar appearance of the patch of eczema, a provisional diagnosis was made of diabetic lesion. This diagnosis was confirmed as in the previous case by finding a large amount of sugar in the urine.

Abscess of the Perineum. A 58-year-old man, married, was seen in consultation on March 19, 1912. For a week previous he had pain and swelling in the perineum with a slight elevation of temperature. On examination a hard, brawny and tender mass was present in the perineum extending to the scrotum. There was a history of a stricture, which had been dilated on various occasions by different physicians. He was a constant user of alcohol and also had a myocarditis. He was operated upon by Whitney on March 22. A median perineal incision was made and pus was found rather deeply situated. The urethra was opened upon a tunnelled sound and a stricture of the deep urethra of 19 caliber was divided. The finger and a sound both entered the bladder easily. In attempting to pass a larger instrument through the penile urethra it entered a pocket. The incision was carried forward until the end of the sound in the pocket came into view. The walls of this pocket were split and the sounds could then be passed with ease. At the time of his entrance to the hospital he was found to have 4 per cent of sugar; but before operation, since a sound could not be passed, it seemed most likely that his abscess was due to a deep stricture of small caliber with resulting infection of the tissues. With the better knowledge obtained at the operation, however, it appears to have been due indirectly at least to diabetes, for a stricture of 19 caliber is not sufficiently contracted to cause an abscess under ordinary conditions. The wound healed very slowly and the amount of sugar

remained between 3 and 4 per cent in spite of restricted diet. He died suddenly March 23 from cardiac dilatation. The wound was nearly healed and he was preparing to go home the following day.

Edema of the Penis. A 47-year-old married negro was first seen Oct. 20, 1906. He gave a history of gonorrhea at 16 years, and a vague one of chancres later. These chancres were not followed by constitutional symptoms. Eight weeks before his visit he noted a marked swelling of the penis, especially along the under surface, and this swelling resisted all treatment which had been prescribed for it. There was no urethral discharge and, aside from the swelling, the penis was normal. The glands were not involved. Heart, lungs, and abdomen negative. Legs not swollen. Urine contained no albumin, but about 3 per cent of sugar. Under diet the swelling disappeared in three days and had not recurred up to time he was last seen, about two years ago.

These cases and others similar, which have been observed by Whitney, show very clearly that in diabetes there may be various lesions upon the genital organs which closely resemble those of venereal origin. Whether they are caused by the direct irritation of the sugar in the tissues or blood current or by lessened resistance to bacterial invasion is not clear. Their chief interest lies in the fact that they easily may be mistaken for venereal diseases.

**Wassermann Reaction in Diabetic Acidosis.** J. H. Richards[8] summarizes his results thus: Four cases of diabetes with marked acidosis. All four cases gave positive Wassermann reactions, which were unaffected by antisyphilitic treatment. Two cases of diabetes in which the urine showed no acetone bodies in one, and only a slight amount of acetone in the other. Both gave negative Wassermann reactions. One case of non-diabetic acetonuria with an absence of diacetic acid and of beta-oxybutyric acid. Wassermann reaction was negative. A study of the relation of the acidosis to the Wassermann reaction in cases of non-diabetic acidosis with diacetic and beta-oxybutyric acids in the urine is very desirable.

(8) Jour. Amer. Med. Assoc., Apr. 12, 1913.

It is evident that syphilis was not an etiologic factor in any of the cases studied. It is also evident from a study of the cases of the first group that a positive Wassermann reaction is not indicative of syphilis in cases of diabetic acidosis. Cases in the second group demonstrate that diabetic glycosuria in absence of acidosis, in these cases at least, does not cause a non-specific positive Wassermann reaction. The case in the third group indicates that non-diabetic acetonuria with an absence of diacetic and beta-oxybutyric acids does not result in a positive Wassermann reaction in non-specific cases.

## The Penis and Urethra.

**Erosive and Gangrenous Balanitis,** according to B. C. Corbus,[4] is a specific venereal disease with local and constitutional symptoms varying with the severity of the infection and due to the symbiosis of a vibrio and a spirochete, always found together. Predisposing causes are phimosis, wetting the labia or penis with saliva, and unnatural sexual relations after alcoholic excesses. It is uncommon in private practice in this country but is fairly frequent in dispensary cases. Probably many cases are unrecognized. The spirochete seems to be similar to one found in Vincent's angina and the vibrio is probably the same as that found in Vincent's angina. Both forms are anaërobic. Both stain by ordinary dyes but the vibrio is Gram-negative while the contrary is the case with the spirochete. The latter is best seen with dark-ground illumination. The ulcers formed are deep with perpendicular edges and are usually mistaken for chancroid as these conditions simulate each other closely and their period of incubation may be the same. The thin yellowish, whitish discharge and the finding of the vibrio and spirochete should help in the diagnosis. The ulcers spread more rapidly and in chancroid the ulcers are usually more multiple. The indolent adenopathy accompanying the balanitis calls for its differentiation from syphilis. In syphilis the incubation period is longer though the two infections may co-exist. In doubt,

(4) Jour. Amer. Med. Assoc., June 7, 1913.

defer diagnosis of syphilis until incubation is passed. In case of mixed infection the characteristic spirochetes can be distinguished easily. In herpes the condition is mild and one fails to find the organisms. As a prophylactic measure, circumcision should be encouraged; it is impossible for the infection to occur after that. In mild cases cleansing may be all that is necessary. In other cases in which there is the slightest evidence of phimosis an incision should be made. A natural tendency is to burn out these sloughing ulcers but this is needlessly severe. As the organisms are anaërobic, hydrogen peroxide, which liberates oxygen in contact with organic matter, acts as a specific.

**Urethral Infection by the Micrococcus Catarrhalis.** E. H. Siter[5] points out that while these cocci are not gonococci, they are diplococci. The clinical symptoms vary somewhat; but the only stable symptom seems to be a slight discharge of more or less mucoid character. The urine is not cloudy and shows no shreds. There are a few flocculi, which float in the urine. The infection in the majority of cases seems to be an anterior one, and in only one case has Siter found any infection posterior to the external sphincter, and this in a patient who never had a gonococcus infection.

The endoscopic picture shows a perfectly normal urethra. The cystoscopic examination is also negative. In the one case where there was involvement posterior to the external sphincter the bladder was perfectly normal. The prostatic examination in all Siter's cases has been negative. There has been no enlargement, and no seminal vesiculitis. The mode of infection is difficult to determine and does not seem to be entirely dependent on the presence of *Micrococcus catarrhalis* in the vaginal secretion. A number of women were examined with negative result after the infection of the male urethra. The period of incubation appears to vary from a few days to several weeks.

Eraud recognized the diplococcus resembling the gonococcus and found it in the normal male urethra. Winfield Ayers has found that *Micrococcus catarrhalis* is

(5) N. Y. Med. Jour., Mar. 8, 1913.

capable of causing a urethritis of more or less severity and that, if it is not recognized early and treated properly, it is a dangerous infection, which presents a clinical picture entirely different from gonorrhea. Watson and Cunningham speak of a diplococcus, which has not as yet been differentiated from the gonococcus, and which is capable of causing acute urethritis, differing from the Neisserian infection in its clinical course. Keyes recognizes the infection of the urethra by *Micrococcus catarrhalis,* but says it is probably insignificant and differs in its clinical aspect from the gonococcus. Wood maintains that *Micrococcus catarrhalis* is rarely found in the urethra and does not give rise to acute urethritis clinically, but to a chronic or subacute process, which resembles the gonococcus infection. Absolute distinction between the two organisms can be made only by cultural methods. Libman states that *Micrococcus catarrhalis* is found in the urethra, and asserts that an absolute differentiation can be made only by culture; when seen early it is impossible to differentiate it from the gonococcus infection and clinically it runs the same course.

*Micrococcus catarrhalis* has been found in the conjunctiva, in pyorrhea alveolaris and in the sputum of patients suffering from influenza. It was seen by Neisser in the examination of sputa of whooping cough, and is found in affections of the nose and throat. It is possible to differentiate these organisms only by culture. Clinically the acute onset is so mild as to be unrecognized by the patient. There is not found any eversion of the meatus, nor any *ardor urinae.* The urination is not more frequent, and the only symptom which is apparent is the presence of a discharge.

Tonics and genitourinary antiseptics seem to be the only treatment of value. Local treatment is valueless and, if continued, aggravates the condition. Silver in any form, either of the newer salts or the nitrate, even if used in extremely weak solution, increases the discharge. The duration is not long, possibly six weeks. Two weeks is the average time. Recurrences are usual. The patient's general condition has as much to do with this infection as anything else. If the patient be run down

and his mucous membrane relaxed, he seems to be more prone to this discharge than patients who are healthy.

Many chronic urethritides are in reality infections with *Micrococcus catarrhalis*, according to Siter. When this fact is not recognized and the patient is treated vigorously, either with sounds or local applications, the case drags on indefinitely. Siter thinks that many of the so-called chronic prostatic and chronic urethritis patients if subjected to a careful bacteriological examination, including cultures, would show entire absence of gonococcus and presence of *Micrococcus catarrhalis*.

**Staphylococcus Urethral Infection,** according to A. Goldberg,[6] is usually of brief duration. Chronic infection is rare and generally results after marked phosphoturia or gonorrhea. It is attended by albuminuria. Renal infection is dangerous. The usual symptoms are tenesmus and frequent micturition, scanty and cloudy urine filled with epithelial cells and cocci.

**Urethral Obstruction.** Of this condition, ten cases are analyzed by B. Tenney.[7] Two symptoms appear in almost every condition which obstructs a ureter. One is pain between the point of obstruction and the tenth rib on the obstructed side. The pain varies from a dull ache to agony and may produce anything from nervous irritability to vomiting and unconsciousness. It is sometimes increased by motion, as in stone cases, sometimes brought on by a change from the horizontal to the upright position, as in cases of ureteral kink, and sometimes appears without regard to either, as in purulent or bleeding kidneys when the pain comes and goes quickly with the passage of some fibrin mass through the ureter. Tenderness may or may not correspond in location. When a patient is in pain from ureteral obstruction he is also tender over the affected kidney; when he is not in pain the tenderness may disappear. The other constant symptom is an alteration of the normal habits of urination. We may find increased frequency, urgency, incontinence, or the necessity of repeated attempts before the desire passes away. The presence of any one of these

(6) Zeitschr. f. Urologie, No. 6, Vol. VII.
(7) Boston Med. and Surg. Jour., Mar. 13, 1912.

symptoms is a plain warning that something is wrong in the urinary tract—not necessarily in the kidney—and calls for further study.

**Urethral and Peri-Urethral Lithiasis.** According to V. C. Pedersen,[8] urethral and peri-urethral calculi are migratory or native. Migratory concretions originate in renal, ureteral, and vesical pathology. Migration of the stone from its seat of origin toward the outer world takes place continuously or intermittently. In the urethra it may be arrested at one of the natural narrowings or at a pathologic focus.

The term encysted calculi is employed for stones in pockets or diverticula communicating with the urethra in either the anterior or posterior portion. Congenital diverticula of the anterior urethra usually occur between the glans and the scrotum. Acquired diverticula result from injuries, cysts, scars, strictures, fistulæ and the like. Prostatic urethral diverticula are also either congenital or acquired. Remains of the urogenital sinus constitute the congenital forms, while the acquired types are due to cysts, abscesses, etc., or, finally, to the secondary effects of the stones themselves, ulceration through the urethra and then encystment.

Native urethral calculi occur through local infection and alteration of the urine. Precipitation of urinary salts occurs commonly around inspissated mucus or other products of inflammation, and is predisposed to by changes in the hydraulics of urination such that retention, decomposition and precipitation are favored. Unusually large bulbs, strictures, fistulæ, abscess cavities, and diverticula are predisposing factors. Such native stones in their genesis are either endourethral, originating in this canal itself, or periurethral, arising in tissues and organs physiologically or anatomically related to the urethra. The prostate is the commonest source of such periurethral stones, and next, abscesses draining into the urethra. The kidneys, ureters, and bladder originate most migratory endourethral calculi.

Urethral lithiasis affects child and adult alike. In children these stones are usually migratory, endourethral

(8) N. Y. Med. Jour., Mar. 8, 1913.

and impacted. In the adult lithiasis may be endourethral or periurethral, migratory with impaction, or native. Likewise, the frequency in the adult of urethral disease permits a migratory endourethral calculus with only moderate impaction and relative mobility to grow in a pouch made for itself. Keep up inflammation and infection and thus by ulceration become finally a periurethral deposit.

In small children practically all urethral concretions are of renal origin, during uterine life, migrating outward and becoming impacted at one of the normal anatomic constrictions, the bulb, penoscrotal angle, and meatus. In adolescents and adults, if the urethra has not been infected the same conditions hold as in children; but inasmuch as a very large majority of adults have, or have had, urethral and periurethral disease, the impaction bears a relation to the sequels of such disease. Stones in children are usually solitary, whereas in adults the number varies from one or a few to a dozen and even a urethraful. The size of the stone usually decreases directly with the number, so that single large stones are the rarest and multiple small stones the commonest finding.

Even in a healthy urethra a partially obstructing stone sets up the pathologic conditions which cause stone and tend to augment the stone itself and its local effects. In this manner a vicious cycle is started. The symptoms of lithiasis of the anterior urethra with impaction are only objective in young children and consist in outcries of pain and straining to pass urine. Urine is voided, if at all, only in drops. In adults, however, the cases fall in two groups: First, patients who have few symptoms until the urethral obstruction suddenly appears; and second, patients who present a logical and consecutive story of renal disorder, pain, pus, blood, urethral colic (during migration of the stone into the bladder), vesical irritation by its presence, and finally urethral obstruction, absolute or relative. Sometimes such patients have noticed the passage of urinary sand and stones, too small to obstruct, on a few or many previous occasions.

The immediate results of the obstruction when com-

plete provide the next group of symptoms, shock, anuria, retention of urine, distended and tender bladder, rupture of the urethra, and extravasation of urine. Slight or partial obstruction may give few symptoms so that stones may be retained with little apparent inconvenience for years. Pulette and Jasjakaw each report patients who retained calculi respectively fourteen and fifteen years. Inasmuch, however, as obstruction is usually marked even when not complete, dysuria, acute suppurative urethritis (distinguishable from gonococcic urethritis only bacteriologically), periurethritis with abscess formation, etc., rapidly ensue. These sequellæ are seen more commonly in adults, because in children shock, total obstruction, or anuria soon cause death.

Physical examination in anterior urethral lithiasis shows the stone lying at the meatus, or some point along the urethra, with or without signs of abscess; and to palpation a hard mass, immobile or mobile, with crepitus if the stones are multiple, with a stricture distal to the stone, or with fluctuation if an abscess is present. Instrumental examination includes the use of a large bougie a boule to define the obstruction, and a small bougie or a sound to pass the obstruction and touch the stone. The urethroscope and *x*-ray verify these findings. Stones in diverticula may escape instrumental examination altogether unless the stone is pressed toward the urethra to make contact with the sound.

Stones of the posterior urethra, like those of the anterior urethra, may be the result either of migration and impaction or of deposition *in situ*. Endourethral and periurethral sites are the chief locations. Children are affected very rarely, but adolescents, adults, and the aged much more commonly because of the greater frequency in them of urethral disease. The exourethral manifestations are almost invariably due to disease of the prostate. Endourethral calculi of the posterior urethra are strictly those of the prostatic urethra as the membranous portion may block their passage, but does not harbor them. In the normal urethra they are almost always migratory with impaction, but in the anatomically deformed or pathologically abnormal channel they

are often formative. They are, therefore, classifiable into free, diverticular, and urethrovesical calculi, and may be solitary or multiple.

Free endourethral calculi of the prostatic urethra are most common. They lie loose in the dilated urethra, are, as a rule, small and multiple, in apposition and facetted; the greater the number the smaller the size and vice versa. They have weighed from 200 to 300 grains. These calculi descend from the bladder and preserve their mobility. In front the membranous portion of the urethra arrests them. Between here and the neck of the bladder they accumulate, the prostatic urethra undergoing dilatation. A sort of gutter for the passage of urine may be present.

Diverticular endourethral calculus of the prostatic urethra is more rare, the calculus appearing in the endoscope as part of the urethral wall, the main mass being hidden in the prostatic tissue, and possibly having the shape of a gourd. These stones either lodge in a natural diverticulum or form a cavity for themselves. In the latter case they might also be regarded as periurethral. As they increase in size they tend to project into the lumen.

Urethrovesical calculi in certain cases may lie in both the urethra and bladder, or merely project into the latter. There may be a groove or a constriction, which corresponds to the neck of the bladder and gives to the calculus an hour-glass shape. It cannot be said whether these stones originate in the urethra or bladder. They cause various disorders of urination.

The symptoms of lithiasis of the posterior urethra of endourethral type may be very slight, as in the anterior portion, owing to tolerance by a normal canal. There may be a doubtful history of impaction or none at all. Another group of cases with a similar history present themselves with a chronic abscess and a fistula at the bottom of which a probe meets the stone. The largest number of patients, however, give a more or less definite history of recurrent, or chronic urinary disorder, with attacks of pyuria and hematuria, ureteral spasm, vesi-

cal irritation, etc. Then comes a crisis which marks the passage of the stone from the bladder and its arrest in the prostatic urethra, soon followed by dysuria, infection, prostatic pain, and pain on defecation. A purulent discharge, requiring bacteriologic investigation to distinguish it from gonococcal invasion, sets in. Physical examination involves the use of the sound, urethroscope, cystoscope, rectal examination, bimanual examination with the sound in the urethra, etc. In these cases the prostate may be the seat of congestion, inflammation, acute or chronic abscesses, hypertrophy or atrophy. If the stone has resided long enough to ulcerate into the prostatic substance the gland may be thinned to a mere abscess wall and the calculus passes into the periurethral tissue. Radiography is of especial value in vesicoprostatic stone and periurethral stone. The solitary endourethral concretions are apt to lead to multiple calculi or become complicated with incrustations of the urethral wall.

Periurethral lithiasis of the posterior urethra embraces two common forms, namely calculi of the prostate itself, and calculi of the periurethral tissues developing after injury and operation. These stones are commonly formative following infection. True prostatic concretions are multiple. Cameron reports 300, Paulicki 240. In composition they are usually calcium phosphate or calcium carbonate deposited about albuminous nuclei. They are frequently not suspected until met during prostatectomy, having caused few symptoms, or they may be associated with chronic prostatitis. The laminated prostatic corpuscles, *corpora amylacea,* may, by apposition of a few dozen, become concretions of pea size, in color milky white, yellowish or dark brown, of fatty lustre, translucent periphery, and brittle consistence. They may lie in the acini and excretory ducts in numbers of one hundred or more, migrate thence into the prostatic urethra, and be found about the colliculus. They appear at any period of life, but are most common in the prostates of old age. Through infection they may be covered with crusts of the lime salts and

thus become true calculi of essentially prostatic origin, as distinguished from endourethral stones, which may ulcerate into the prostate. The lime salts deposited are mostly basic phosphates, carbonates, triple phosphates, and sometimes oxalates, and change the appearance and consistence of these bodies so that they are hard and no longer translucent. On cross section they have a radiate striation. If single they may reach even the size of a hen's egg or be very numerous, small and facetted. The prostate may be involved as a whole or in part, or multiple stones may be individually encysted or occupy a common cavity. Radiography reveals two types, one diffusely distributed stones of hemp seed size, common in old age; the other with stones crowded together on both sides of the median line, appearing at any period of life.

It is well recognized that these concretions cause chronic prostatitis with destruction of the secreting portion, cyst formation and atrophy, until only a thin wall of glandular structure or the capsule alone remains. Abscess and sinus formation may occur at any point.

The symptoms of true prostatic lithiasis may be insignificant and pass unnoticed during life. On the other hand, large, solitary, or multiple calculi with prostatitis may provoke pronounced symptoms such as difficult, painful, and frequent urination, pain in the perineum, prostate and rectum, radiating down the penis and thigh, obstipation and painful defection, purulent urethral discharge. Rupture of the stone into the prostatic urethra shows itself as acute posterior urethritis or as acute retention, depending on the size of the stone and swelling of the mucosa. If small, the stone may escape with the urine. Abscess and external fistulae may result.

Diagnosis of true calculi may be easy by palpation through the rectum, if the stone is large and the prostate atrophic, or if the gland is nodular with multiple calculi which crepitate. The diagnosis may be extremely difficult if the stones are small, centrally located and individually encysted. The sound will detect any stones which project into the urethra and will aid as a means of bimanual examination, a procedure which should never

be omitted. The acoustic explorer, designed by Poncet, the urethroscope, and cystoscope are very important. Radiography is also of use where other methods may not have been satisfactory.

Treatment of urethral and periurethral lithiasis is preventive and curative. Preventive measures imply the management of errors in general and urinary metabolism, such as intestinal autointoxication, which almost invariably invites colon bacilluria, and excess of crystals or actual gravel in the urine. Prevention also includes careful after treatment in any urogenital surgical condition, so that foci and pockets of precipitation may not be left behind.

Cases are either of emergency or of election type. Emergency cases are characterized by acute, severe symptoms of obstruction, anuria, infection within a few days, even hours, and occur in childhood and old age. A fatal issue is all too common. In adolescents and adults other than the aged emergency cases arise in the same manner and from the same causes, but usually as a urinary crisis during the longer or shorter history of antecedent disorder. On the other hand, a very large group of cases are of the election type and permit the surgeon to proceed more or less at his own choice as to time and means, depending on the presence or absence of complications. If the stone is mobile, recently impacted, and without total obstruction of the urine, most authorities will agree that an effort should be made to pass it forward out of the anterior urethra or backward into the bladder by instrumental or digital manipulation. Delivery from the anterior urethra may often be made through the aid of meatotomy, crushing with alligator forceps, and dilation of the obstructing stricture with the straight sound. Large, blunt pointed sounds may be used to retire stones into the bladder where they may be crushed and pumped out. The disintegration of stones may be easily accomplished with the fulgurating wire through the cystoscope in the bladder or through the open end urethroscope in the urethra. Almost all uncomplicated cases will yield to the foregoing rational measures. The complicated cases, how-

ever, which almost always have infection as the cause of the complication, require open operation, removal of the stone, and drainage of the infected field.

## The Prostate.

**Neuroses From Prostatic Disorder,** according to F. X. Dercum, are divisible into those that are directly dependent upon and are part of the symptom-group of the local disease and those which are merely indirect outcomes or sequelae. Among the first group are various associated and referred pains and sensations. They are features added to the purely local symptoms and may be briefly enumerated as follows: Pain in the upper sacral and lumbar region spreading, it may be, up to the level of the shoulder-blades, painful sensations referred to the groins or diffused over the iliac fossae; pain referred to the thighs; sensations of pressure referred to the top of the head or diffused widely over the head; finally, though less frequently, actual headache. Occasionally distressing sensations are referred to the precordium. These symptoms suggest the associated nervous phenomena met with in women with uterine disease, and are not regarded as neurasthenic manifestations, but as part and parcel of the symptom-group of the prostatic disease itself. Symptoms of neurasthenia are those of chronic nervous fatigue, the "fatigue neurosis." They differ radically from the nervous phenomena, the result of visceral disease.

Patients with prostatic and deep urethral disease often complain of difficulty in thinking, difficulty in the performance of mental acts which require concentration, and they commonly manifest a distinct disinclination for mental work. Further, they often complain of disturbed sleep, and sometimes there is a decided insomnia. Associated with the symptom-group here briefly outlined are secondary symptoms, the indirect outgrowths of the local disease, and these are distinctly psychic. The picture presented depends largely upon the age of the patient. If the patient be a relatively young man

or one still in the period of full sexual activity, his thoughts assume a distinctly sexual character. Almost involuntarily his thoughts become centered upon his sexual organs and functions. Not infrequently, as is well known, he reads all sorts of literature, much of it misleading and objectionable, in reference to sexual matters. Further, he quite commonly comes to the physician with statements which show that he has closely studied the appearance of his genitals; he often declares that the latter are becoming smaller, are undergoing atrophy, or present some other strange peculiarity. Not infrequently, also, the patient closely observes his urine. If the latter happens to be cloudy with mucus, he declares that it contains spermatic fluid, and a similar interpretation is often placed upon phosphaturia. His mental attitude is that of a more or less marked depression. Quite commonly he accuses himself of past sexual abuses, declares that he has lost his sexual power, the blame for which he fixes upon himself. Self mutilation and even suicide have been known to occur under these circumstances.

There can be no doubt that a previously existing neuropathy greatly influences the resultant mental picture. The greater the neuropathy, the more profound and distressing the mental symptoms. To show how true this is, we have only to call to mind the picture of typical sexual hypochondriasis in which there is no affection either of the prostate, the urethra, or other portion of the genital apparatus. In such cases the patient suffers from a true psychoneurosis, independent of visceral disease and the outgrowth of the inherent neuropathy. Such an inherent neuropathy may exist in an individual in whom prostatic and urethral disease also is subsequently established. If the patient happens to be relatively old at the time that prostatic disease is established, very remarkable mental phenomena may manifest themselves. There may be a recrudescence of sexual thoughts and feelings. Some of the cases of old men falling in love and some of the marriages of old men are to be attributed to prostatic disease. Sexual recrudescence in old age is always pathologic. In senile dementia it ap-

pears to be the outcome not only of the mental weakness and the diminished inhibition of old age, but quite frequently of the peripheral irritation of prostatic disease. Here are classed some of the instances of exhibitionism, of rape, and toying with children by old men.

At times the mental phenomena are clearly beyond the bounds of sanity. Among the symptoms are delusions, at times expansive, especially when relating to the physical vigor and health of the patient; but at other times and more frequently they are depressive. The patient often believes that he is ill-treated and abused,—it may be by his children, who oppose a second marriage. At other times he is toxic from the bladder and prostatic conditions and becomes hallucinatory and confused. That such cases, due in part to the senile mental state and in part to the prostatic disease, not infrequently give rise to serious trouble and unhappiness in families, to the making of improper and unjust wills and to subsequent contests in the courts, is a story with which many of us are familiar.

Finally, the feeble resistance, the nervous and psychic vulnerability of old men to prostatic operations, more especially prostatectomy, is well known. At times, in addition to the symptoms of physical shock with which the surgeon is familiar, there arise mental symptoms. As a rule the latter are not immediate sequelae of the operation, but only supervene after many days or even weeks. They manifest themselves in the form of mental confusion. The confusion is not active but is, notwithstanding, pronounced. Not infrequently there are present auditory and somatic hallucinations, together with delusions fragmentary and depressive in character. When once established the condition lasts for weeks, sometimes for months, and is often incorrectly spoken of as a melancholia.

Usually lucidity is gradually re-established, but the patient may remain depressed for a long time with painful ideas, such as poverty and neglect, persisting. The condition does not differ on the whole from the mental confusion which occurs as a sequel of other operations upon the aged; a mental confusion every now and then

occurs in old women with fibroid of the uterus, especially when the fibroid is degenerating.

**Prostate Hypertrophy Simulation.** Cuthbert Wallace [1] concludes from analysis of several cases that many present symptoms which at first sight might reasonably be considered as due to prostatic hypertrophy, but which subsequent examination proves to be due to other causes. Prostatic enlargement can be excluded only by a bimanual examination through the opened bladder. Even when a bimanual examination shows no enlargement to exist, the cause of the errors of micturition may still lie within the prostate. No error of micturition should be assigned to a failure of nerve or muscle until all mechanical defects have been excluded. A bending of the prostatic urethra is the cause of the difficult micturition, in some cases at all events, and the patient can be cured by a simple operation.

**Prostate Tuberculosis,** according to A. Gotzi,[2] almost always occurs as a secondary condition. Infection takes place from blood lymph or by contact; if by the blood, the prostate epididymis, kidney and seminal vesicles are attacked simultaneously. Lymphatic infection follows the lymph stream. Most cases develop during the period of sexual activity. Persistent urethral discharge in a tuberculous patient should in the absence of the gonococcus lead to suspicion of tuberculosis. Prostatectomy is of value. Sometimes dissecting out the fistula and curretting the prostate give good results.

**Prostate Cancer and Suprapubic Cystotomy.** According to C. G. Cumston,[3] suprapubic cystotomy is certainly the operation of choice when it is possible to do it, because it allows one to remove the carcinomatous prostate later on if conditions are suitable. At the present time the occurrence of prostatic cancer is well recognized and it should always be looked for in every case of supposed simple prostatic hypertrophy. When in the early stage, before serious symptoms have arisen, a radical operation can be done successfully; but in ad-

(1) Clin. Jour., July 9, 1913.
(2) Folia Urologica, No. 7, Vol. vii.
(3) N. Y. Med. Jour., Mar. 29, 1913.

vanced cases palliative measures alone are indicated. For this reason total prostatectomy should follow suprapubic cystotomy as soon as the conditions admit, the suprapubic operation being indicated by certain urgent symptoms resulting from the prostatic process.

But there is always a notable proportion of inoperable cases in which the growth has extended beyond its capsule and in which prostatectomy would be useless, if not disastrous. This is what Guyon called the diffused type. Besides not being able to remove the neoplasm completely there is always danger of fatal hemorrhage or rapid extension taking place immediately after the attempt at removal. These instances are certainly of the *noli me tangere* class, and to them palliative operations alone apply.

Perineal section is now generally considered a bad operation because the route followed is in itself a poor one. It exposes the patient to serious operative hemorrhage, because one is obliged to go directly through the neoplasm in order to reach the bladder. It favors the development of inflammation in the growth and is a source of repeated irritation by the constant passage of the urine over it, from which may arise increased activity, proliferation, and generalization. Then, too, micturition is no longer voluntary, incontinence returns with reappearance of all the serious symptoms. The only purpose it serves is to combat the retention at the immediate time and to disinfect the bladder, both of which indications are fulfilled by the suprapubic operation. Catheterization becomes often impossible, difficult, or very painful and usually does not control the symptoms for which it is done. The difficulty or impossibility of introducing a catheter has been an indication for cystostomy. With repeated catheterization, the result is pain and hemorrhage; with the permanent catheter also stubborn pain without any chance of an amelioration in the patient's condition.

In inoperable prostatic cancer suprapubic cystostomy is the only resource and should be done without delay, if the operation is to be of any real and lasting benefit. The bladder should be opened as soon as there is any

disturbance in the flow of the urine, because an early suprapubic cystostomy not only procures permanent relief, but in many cases the progress of the malignant disease is lessened by the favorable general effect of the operation. The same rule applies to the operation of colostomy in rectal carcinoma. In some cases the life of the patient is undoubtedly prolonged. Desnos reports a case where the patient survived the operation three years and a half, another two years and a half, while a third lived for over four years. Guillemot's patient lived fourteen months, Delore's patient lived in peace for eleven months, while two of Cumston's lived quite happily for eighteen and ten months respectively.

## The Seminal Vesicles.

**Spermatocystitis.** Diagnosis of this condition, according to A. Hyman and A. S. Sanders,[4] is dependent upon rectal palpation supplemented by microscopic examination of the contents of the vesicles obtained by massage. In this respect it is important to note that the normal vesicles are palpable in about seventy per cent. of all cases. In palpating the vesicles, one should determine chiefly their size and consistence. As regard size and consistence the cases generally can be classified under one of two types, spermatocystitis catarrhalis and spermatocystitis fibrosa. In the former condition the vesicles are moderately or greatly distended. On this fact alone, however, the diagnosis of vesiculitis cannot be made, for distension, even though of considerable degree, is by no means of pathologic significance, for the normal capacity of the vesicles varies considerably. According to Picker this variation is from 1.5 to 2 c.c. In the fibrous type the vesicles feel hard, and are often irregular in outline. They may be so atrophied that they fuse into the circumvesical tissues and cannot be palpated. At times they can be made out as two hard cord-like masses. Tenderness, while a valuable symptom in acute cases, cannot be relied upon in the chronic cases as an indication of the changes the vesicles have under-

(4) Urolog. and Cutan. Rev., July, 1918.

gone, for the reason that the normal sensitiveness of this region varies considerably in different individuals. It is of interest to note that the urethroscopic appearance of the colliculus often agrees with the results of rectal palpation, *i. e.*, in the fibrous vesicles the colliculus is found frequently atrophic, hard, and grayish white in color, whereas in the catarrhal type a hypertrophied or congested caput is generally seen. A positive diagnosis of spermatocystitis really depends upon the results of microscopic examinations of the secretion from the vesicles. In order to obtain the contents of the vesicles uncontaminated by the urethral and prostatic secretion, the method of Cabot is practical, and at the same time accurate. The technic is as follows: The urethra and bladder are first flushed with a mild antiseptic solution, so as to remove any contamination from these sources. The bladder is then distended with the solution and the prostate is massaged; the solution voided contains the prostatic secretion. The bladder is again filled, this time perferably with saline solution, and the vesicles are massaged. The discharge which appears at the meatus and that which flows back into the bladder should be collected for examination. Lewin and Bohem, from their investigations, give the following results of microscopic examination of the vesical contents in spermatocystitis: Leukocytes are found in all cases, gonococci in 14 per cent., live spermatozoa in 11 per cent.

**Vas and Vesicle Injections Through a Vasostomy.** Vas and vesicle usually accommodate from 4 to 6 c.c. of a non-irritant liquid, such as 5 per cent. argyrol solution, injected through a scrotal vasostomy, says Belfield.[5] None of the solution escapes through the ejaculatory duct until vas and vesicle are filled, because this exit is closed by a sphincter. This muscle yields to overfilling of the seminal ducts, the solution passing into the prostatic urethra and thence usually backward into the bladder, but occasionally forward into the anterior urethra, escaping at the meatus. An unlimited quantity of solution may

(5) Jour. Amer. Med. Ass'n, Nov. 22, 1913, p. 1867.

thus be used to irrigate vas, vesicle, ejaculatory duct, prostatic urethra and utricle; and this irrigation may be repeated at the discretion of the operator.

For days after such filling of the seminal duct, peristalsis of vas and vesicle occurs, shown by the constant presence of argyrol in the urine, and sometimes demonstrable through the urethroscope as an intermittent discharge from the ejaculatory ducts. Since this action occurs without subjective perception, peristalsis must be regarded as a normal function of the seminal, as it is known to be of the urinary, duct; and the prostatic urethra as the natural catch-basin for the seminal duct, as is the bladder for the urinary canal.

Retrograde urination, that is, the escape of urine through the vasostomy incision when a strong desire to urinate is resisted by the patient, has been observed in three of Belfield's cases; in two of these, argyrol solution injected into the bladder was forced through the scrotal incision, proving the source and course of the clear fluid previously observed to issue from the cut. Two of these patients had suffered from frequently recurring epididymitis during several years following a gonorrhea; in each the corresponding ejaculatory duct was patulous and easily catheterized. Although this passage of urine from the urethra into the vas seems hitherto to have been unobserved except after operations on the prostate (by Voelcker in two operative cases), yet it seems probable that such retrograde passage of urine into the seminal duct may be the not infrequent cause of recurrent epididymitis and vesiculitis following gonorrhea, as in these three cases.

The normal peristalsis of the seminal duct explains certain hitherto obscure phenomena, including the phosphaturia so frequent in the subjects of sexual neurasthenia. These men usually exhibit an infection of the vesicles with hypersecretion and active peristalsis of their contents. Since the vesicular secretion is known to precipitate lime-salts when mixed with urine, it is apparent that the constant discharge of such secretion into the prostatic urethra and thence into the bladder can throw the lime compounds of the urine out of solu-

tion in the bladder, causing phosphaturia. That this was the correct explanation in two patients Belfield proved by catheterizing both ureters while the urine in the bladder was cloudy from undissolved lime-salts; from these catheters clear urine escaped. Blood and pus mixed with urine may be derived from the vesicles.

Anastomoses between the dilated extremity of the vas (ampulla) and the associated vesicle are not rare. Since these anastomoses must furnish direct passage of spermatozoa into the vesicle, this observation seems to prove that the vesicles may be not only secretory organs, but also reservoirs for spermatozoa, contrary to the current assumption.

Experience with vasostomy has shown that sterility may be due to occlusions not only of the epididymis, but also of the vas and of the ejaculatory duct; also that the absence of spermatozoa from the emitted fluid is sometimes due not to an obstruction of the ducts but to arrest of the spermatogenic function of the testis through an infectious disease, such as mumps or typhoid fever.

The juxtaposition of ureter and infected vesicle, already shown to be capable of causing obstruction of the ureter and consequent damage to the associated kidney, is illustrated in some of Belfield's radiograms. The ureter is shown to lie approximately over the central axis of the vesicle; the usual text-book illustrations, made from dissections of the dead subject, apparently do not represent the relations existing in the living body.

Infections invading the seminal duct from either end (urethra or epididymis) may produce (*a*) occlusion or (*b*) a patulous condition of the ejaculatory duct. In the former event a closed abscess results; in the latter, vesicle and epididymis are liable to recurrent invasions by infection and even by urine from the prostatic urethra. The result in either event may be a pus-tube with chronic toxemia. This condition usually can be treated successfully by injecting the vesicle through vasostomy, sometimes also from the urethra.

In medicating the vesicle through vasostomy, a pre-

liminary injection of some non-irritating liquid, such as 5 per cent. argyrol solution, should be made to test the patency of the entire seminal canal. Should this solution reach the urethra in a few minutes (shown by blackening of the urine), collargol solution, from 1 to 3 per cent., may be immediately injected. If the argyrol does not appear in the urine, the more irritating collargol should not be used; for it will be regurgitated into the scrotal tissues around the cut, and there produce a tender induration which is slow to disappear.

### The Testes and Scrotum.

**Acute Epididymo-Orchitis Due to B. Coli.** W. P. Bonner[5] tells of a 65-year-old man, who, on April 4, 1913, strained himself lifting a heavy box. This exertion caused pain in the lower abdomen which was so severe that it made him sweat. The pain ceased after a few minutes, and after passing a large amount of urine he continued with his work as usual. Four days later he complained of frequency in micturition, at first every half hour, then seven to eight times a day and two to three times during the night. The family physician gave him medicine (no injection). Two days later he had pain in the right testicle, which came on during the night. The right side of the scrotum gradually became swollen and red. He never had any urethral discharge or pain on micturition. There was no previous history of venereal disease; he married at 20, has a family of 13 children. His wife is in excellent health. No history of coitus since 10 days previous to the onset of the frequency in micturition.

On examination (April 24th) the patient was found to be a poorly developed, ill-nourished man. Temperature 100.40 degrees, pulse 94. The urine was acid, of specific gravity 1020, and contained a considerable amount of pus and mucus. The right half of the scrotum was swollen, red, very tender, and hot; the skin was adherent at the lower and posterior part. The right epididymis was extremely tender and enlarged so much

(5) Lancet, Oct. 4, 1913.

that it almost covered the right testicle. The right testicle was swollen and tender (no hydrocele). The right spermatic cord was swollen and tender throughout the whole extent which could be felt below the external abdominal ring. The right inguinal canal was tender on palpation. The urethra had a healthy appearance and was just moistened with clear mucus. No purulent fluid could be expressed by squeezing the penis. The prostate and vesiculæ seminales (felt per rectum) were not enlarged or tender. The left side of the scrotum and its contents showed nothing remarkable.

On April 30th the anterior portion of the urethra was washed out thoroughly with boric lotion. A sterilized soft indiarubber catheter of large size was passed without any difficulty, and a specimen of acid urine was drawn off. This specimen on microscopic examination showed a few pus cells and a quantity of coliform bacilli. Pure cultures *B. coli* were subsequently grown from this same specimen and an autogenous vaccine was prepared. On May 13th a soft fluctuating swelling appeared at the lower and posterior part of the right side of the scrotum. The skin over this area having been carefully prepared, the swelling was aspirated and a small amount of cloudy fluid obtained. Pure cultures of *B. coli* grew from this fluid. On May 15th the swelling (now more marked) at the lower end of the right scrotum was incised under a general anæsthetic. A small amount of material was removed which appeared to be almost entirely composed of disorganized tubules. No actual fluid pus was seen. On miscroscopic examination this material was found to be composed of a mass of necrosed tubules of testis and epididymis, *B. coli*, and a few pus cells. Subsequently pure cultures of *B. coli* were grown from this material. The urethra examined by the urethroscope appeared to be quite healthy; there was no stricture and no evidence of old or recent gonorrhea. Prostatic fluid obtained by massage of the prostate showed a few pus and epithelial cells, *B. coli*, and Staphylococci (no gonococci). Cultures taken from this fluid produced colonies of the *B. coli* and *Staphylococcus albus*. The *B. coli* obtained on

each of these four separate occasions were identical in structure and gave the reactions of Friedländer on sugars. Carefully taken radiographs showed no sign of any pathological conditions in the regions of the kidneys, ureters, or bladder.

Treatment: Rest in bed with the scrotum well suspended. Locally, at first, the application of moist heat in the form of boric fomentations and later (after incision) daily dry dressing with plain sterilized gauze. Medicinal: Maintaining the reaction of the urine alkaline by the administration of citrates and bicarbonates; bladder sedatives, hyoscyamus and buchu. Vaccine: Gradually increasing doses of the autogenous *B. coli* vaccine were given once a week, commencing with 5 millions and increasing up to 100 millions. The patient has made an excellent recovery, the affected area of the right testis and epididymis being now represented by a small fibrotic nodule. The left epididymis and testis remain unaffected.

This case seems to suggest that some of the conditions of acute epididymo-orchitis of obscure origin are due to an infection with *B. coli*, brought on by a strain while the bladder is full of urine.

**Primary Acute Orchitis in Children.** According to Ombredanne[6] this condition is often related to torsion of the cord. There is sudden onset, pain of varying grade, temperature of 99.5° to 100.5° F., edema and redness on one side, swelling of the testicle, a small quantity of fluid in the tunica and opacity of the tumor. In seven cases operated upon the author found torsion of the spermatic cord in four instances and thought that the same condition existed in one and perhaps even two of the remaining three patients. In consequence he divides the condition represented by the above symptom complex into cases of true orchitis and cases of torsion. In the torsion cases suspicion points to masturbation as a cause. Torsion demands operative treatment and where doubt exists as to whether the condition is torsion or orchitis operation is indicated.

(6) Presse Méd., Aug. 10, 1913.

**Malarial Orchitis.** C. G. Roehr[7] points out that one of the peculiarities of malaria as found in Florida and Cuba is orchitis, with or without remission of symptoms such as neuralgia or tumefaction. These cases are often accompanied by some urethral discharge, such a discharge showing a mixed saprophytic bacterial flora, and in most cases the patient is positive that he has the typical gonorrheal orchitis. Crescents are most abunant in the blood in these cases. All that is necessary to classify the trouble etiologically is a few massive doses of quinine. As a rule 3 or 4 one-drachm doses are sufficient; but cases occur which will not yield to less than 120 gr. doses. It is a good principle to continue a 30 or 40 gr. dose weekly for one or two months to prevent recurrence.

**Hydrocele Recurrence After Radical Treatment.** At the time E. Wyllys Andrews widely heralded what he dubbed the "bottle" operation for hydrocele, the majority of operations tended more to conservative measures, such as tapping, followed by irritant injections to destroy the epithelium, or opening the sac and packing the cavity with gauze for the same purpose. The "bottle" operation is so easily performed that it found great favor among surgeons. On account of the frequent recurrence of the hydrocele following the operation, its greatest benefit was the weaning of the surgeon away from the tapping and open wound method. Tait[8] considers that recurrence is due to the neglect of stitching the everted vaginal tunic to the posterior surface of the cord. He advocates Longuet's method of eversion (without delivery of the sac). After stitching together the edges of the everted tunica posterior to the cord, a new bed is made for the testicle in the middle of the inner edge of the incision and the scrotal wound is closed. Tait's patient is out of bed on the second day (Krotoszyner, in discussing the paper, states that in his experience it takes about seven days in bed); mobility of the testicle may be noticed as early as the third day. Tait objects to the total exsection of the tunica vaginalis being

(7) N. Y. Med. Jour., Apr. 19, 1913.
(8) Calif. State Jour. Med., March, 1913.

called von Bergmann's operation, contending that it is as old as Celsus' time. The operation of removing the sac unopened is the ideal, but difficult and not applicable where pachyvaginalitis is present. Tait considers the protective rôle of the vaginal tunic for the testicle as being over-estimated and that experimentally, under strictly aseptic conditions, devaginated testicles do not atrophy.

**Testicular Malignant Growths.** Vecchi[9] reports 31 of these tumors. Twenty-four were large-celled tumors, which include both carcinoma and sarcoma of previous writers. The tumors are most commonly found between the ages of 30 and 40 years, on the right side 14 times, on the left 10, never bilateral. The epididymis is usually extensively involved, the cord spared. When the spermatic cord is involved pain is always present. Metastases occur through the lymph channels in the lumboaortic lymph glands. Operative treatment is castration and high incision of the spermatic cord. The lumbo-aortic lymph glands should not be excised as a rule at the time of operation because of the severity of this operation and also because of the probability of other metastases.

## The Bladder.

**Bladder Impairment.**[1] Unfortunately, in an all too large proportion of cases, the underlying cause of bladder impairment is not investigated sufficiently to determine positively the exact etiologic factors involved. Difficulty in micturition does not always depend upon a purely mechanical obstruction to the urinary outflow. It is simply enough to lay the blame of defective bladder function upon an enlarged prostate, particularly if the patient's age affords some basis for this assumption, or upon stricture of the urethra or even stone; but a diagnosis involving one of these factors should not be made the basis for subsequent operative measures unless it can clearly be shown to exist. Urology of today has advanced to the point where guesswork has given way to precision;

(9) Zeitschr. f. Chir., September, 1912.
(1) Urolog. and Cutan. Rev., August, 1913.

and it is the patient's due to grant him every advantage in this direction. In the absence of demonstrable physical causes of vesical impairment, a searching investigation of the patient's nervous system should be instituted.

In the prosecution of such an investigation the cystoscope may afford a clue to the causative condition. Thus it is known that one of the early symptoms of tabes is a fine trabeculation which offers a somewhat different picture from that of trabeculation resulting from the continued efforts of the bladder to evacuate its contents in the face of increasing obstruction at the neck or in the urethra. Trabeculation of the bladder walls is so commonly associated in the mind with obstruction that in its presence the immediate conclusion that the bladder difficulty complained of is due to mechanical interference with the stream is reached without due thought of the possibility of a spinal lesion.

Text-books on urology which mention the subject at all do so slightingly; and, as a result, students of urinary disorders are not sufficiently impressed with the importance and relative frequency of such a condition. The mechanical causes of bladder difficulty are given such overwhelming importance in listing the etiologic factors —and it is undeniable, of course, that they are much more frequent than the non-mechanical—that with many physicians the possibility of a non-mechanical etiology is entirely lost sight of, and the result may be ill-advised and fruitless operative procedures.

**Bladder Cyst.** The anterior bladder wall was occupied by a cyst the size of a cherry in a patient reported by R. Hottinger,[3] a 46-year-old man. Pain occurred on urination and there was a residuum of urine in the bladder of from 100 to 200 c.c. The cyst, probably an enlarged bladder gland, was found by the cystoscope and removed.

**Bladder Ulcer.** J. Buerger[4] reports two cases accompanied by dysuria, urgency, frequent micturition, pyuria and hematuria. Bladder ulcer, according to Buerger, is usually chronic in course and when solitary often causes

(3) Folia Urologica, No. 6, Vol. vii.
(4) Folia Urologica, No. 9, Vol. vii.

chronic cystitis and contracted bladder. The ulcer is usually in the trigone and often requires excision to effect a cure.

**Bladder Papillomata.** P. M. Pilcher[5] points out that a single papilloma of the bladder is usually benign and multiple papillomata probably malignant. In the treatment of papilloma of the bladder very positive results have been obtained by means of the high frequency current. Beer, of New York, has demonstrated a method by which these growths may be successfully attacked and destroyed without opening the bladder. This method consists of applying a high frequency spark to the growths by means of an insulated wire passed through an ordinary catheterizing cystoscope. It is not necessary here to go into the details of the electrical apparatus employed—suffice it to say that the unipolar high frequency current is produced by an induction coil especially constructed for that purpose. To apply the spark the cystoscope is introduced and the bladder is distended with water. The insulated wire is passed through one of the catheter canals of the instrument and, with the new growth in view, the wire is pushed into the mass, the current is turned on and the spark is produced at the point of contact. The visible results are ebullition with the production of gas bubbles and a blanching of the tissues in the immediate neighborhood of the spark. The current is allowed to act for about thirty seconds, and then another portion of the growth is attacked. Small growths may be destroyed in a single sitting by this means, while more extensive growths demand repeated applications.

**Vesical Papilloma and Carcinoma.** F. S. Watson[6] concludes: At least two-thirds of all tumors of the bladder that are encountered by the surgeon are malignant. There is an extraordinarily well-marked tendency to recurrence in a malignant form after the removal of a benign neoplasm. In a certain proportion of the cases recurrence takes place in multiple form, the recurrent tumors being either benign or malignant, more fre-

(5) Urolog. and Cutan. Rev., September, 1913.
(6) Urolog. and Cutan. Rev., February, 1913.

quently the latter. About two-thirds of vesical neoplasmas have their seat in the lower third of the bladder. It is impossible to be absolutely sure of the nature of a circumscribed tumor of the bladder except by means of microscopic examination of all parts of the growth after it has been removed. The large majority of all vesical tumors are either papilloma or carcinoma. The remainder are, in order of frequency, sarcoma, myoma, adenoma, angioma, osteo-chondrosarcoma, rhabdomyoma and dermoid cyst, the last three being exceedingly rare.

After the removal of a benign tumor recurrence has taken place after an interval as long as thirteen years, in one instance, and in several more instances after an interval of from six to ten years. Recurrence has taken place in a few cases after the removal of a malignant tumor, as long as six years from the time of the operation. The greater number of recurrences take place within the first year following operation in both benign and malignant tumors, and a large majority of the recurrences have been within the first three years after the operation.

All tumors of the bladder cause death of the patients, the benign ones by means of repeated hemorrhages and by secondary changes produced by the presence of the tumor-cystitis and renal infection. Malignant tumors kill after the manner that they do elsewhere.

In a few cases of both benign and malignant tumors of the bladder there have been remarkably long intervals between the occurrences of symptoms, and death has delayed for many years, as long as 30 years in one instance, and as long as 15 to 20 years in several others. The average length of time, however, between the first appearance of symptoms and the death of the patient is about three years in cases of malignant tumors and about four years in those of benign neoplasms. Clinically speaking there is strong evidence to show that in a considerable number of cases tumors originally benign have at some time in their course become malignant.

**Bladder Cancer in Synthetic Dye Workers.** Schmidt[8] finds that bladder cancer is 30 times commoner among

(8) N. Y. Med. Jour., Jan. 9, 1913.

synthetic dye workers than in ordinary citizens. The first symptom noted is usually vesical tenesmus, which comes on at a stage when lesions are hardly visible microscopically. This symptom would suggest irritation of the mucous membrane as the primary etiologic factor. The growths later observed are either papillomas or solid cancerous neoplasms, rarely sarcomas, and are always of a high degree of malignancy. In most instances the condition develops only after many years have been spent in the factories and sometimes it occurs when the individuals are no longer exposed, a point of resemblance to *x*-ray cancer. This form of malignancy, considered in conjunction with that of chimney sweeps and of workers in paraffin, tends to show that cancer may actually result from chemical or physical irritation.

## The Ureters and Kidneys.

**Ceco-Ureterostomy in Bladder Exstrophy.** D. Taddei[9] advises the following procedure: At a primary operation the ileum and ascending colon are severed near the cecum and joined by terminolateral or laterolateral anastomosis, preferably with the Murphy button. The openings into the cecum having been closed, an appendicostomy is done, a portion of the organ being passed under or in the muscle tissue, or subcutaneously, in favor continuence. The cecum is then gradually asepticized by irrigations with silver salts through the appendicular lumen, and at a second operation the exstrophied bladder is removed, an elliptic portion of the trigonum, as in Maydl's procedure, or better, two discs of bladder wall including the ureteral openings, isolated and implanted into the cecum, an area on the inner and lower surface of which is brought up extraperitoneally for the purpose. Ureteral catheters are introduced during the operation, brought out through the appendix, and allowed to remain for some days in order to prevent the contact of urine with the lines of suture during this period.

**Congenital Ureteral Stricture and Calculi.** L. Lower[1]

(9) Urolog. and Cutan. Rev., October, 1913.
(1) Amer. Jour. Urology, January, 1913.

reports the case of an 18-year-old man with a history of attacks of renal colic since infancy. A radiograph showed a calculus in the lower part of the left ureter. At operation a much dilated left ureter was found with a constriction of the ureter a few inches above the bladder; no stone could be found. Immediate radiography showed the stone to be near the kidney. A lumbar incision was made and a constriction of the ureter noted on a level with the lower pole with the kidney. The stone was found at this point, pushed down, and removed through the original incision in the ureter. Between the two points of constriction the ureter was as large as a loop of small intestine.

**Renal Calculi,** according to M. Kahn,[2] are generally composed of calcium oxalate; sometimes it is their sole component. Uric acid and the urates occur in small quantities in all renal calculi, but it is rare to find one composed mainly of these compounds. The shape, color, and consistence of a stone are not criteria of its chemical composition. Gouty tophi are not always composed of uric acid or urates. In three concretions examined, a negative murexide test was invariably obtained.

**Pyelotomy for Renal Calculi.** D. Eisendrath[3] concludes: Nephrotomy is preferable in cases in which there is a large branched calculus filling the renal pelvis, or in which there are many small calculi lying scattered throughout the kidney in closed cavities. In many of these cases, especially if the condition is bilateral, a finger inserted into the renal pelvis through a pyelotomy incision will aid in locating the calculi and they can be delivered through multiple small incisions in the convex surface of the kidney.

Nephrotomy is to be chosen in infected cases in which there is more or less destruction of the parenchyma. Eisendrath urges strongly the necessity of ureteral catheterization of each kidney as a routine method before any operation for the removal of renal calculi. One never knows absolutely before operation whether the kidney must be removed; hence the obligation on the

(2) Zentralbl. f. Chir., April, 1913.
(3) Jour. Amer. Med. Assoc., Apr. 12, 1913.

part of the operator of knowing the functional capacity of the opposite organ. In infected cases, when it is not necessary to remove the kidney, drainage is far better through a nephrotomy incision than through that of a pyelotomy. Nephrotomy is the safer operation when the renal pedicle is short, or when there are extensive perinephritic changes which render delivery of the kidney into the wound very difficult. The condition of the parenchyma can be determined much better through a nephrotomy incision. Much information as to the extent of destructive changes should have been secured, however, before operation from the clinical history, palpation, *x*-ray findings, functional tests and examination of the urine from each kidney. The bleeding during the operation is far greater than in pyelotomy even though the renal pedicle be well compressed. If the nephrotomy incision be made just large enough to admit the index finger, while the renal vessels are compressed at the hilus, the amount of blood lost, it is true, is usually slight. If the incision be more extensive, even though it be made behind the middle of the convexity, as Zondek has shown, the bleeding may be quite alarming, especially during the removal of a large branched calculus. The employment of bisection of the kidney has fortunately become greatly restricted through the greater accuracy of our radiographic technic. The danger of hemorrhage following nephrotomy is by far the greatest objection, and has been one of the chief reasons for the rapidly growing popularity of pyelotomy. In addition to arteriosclerosis, hemophilia and imperfect suture of the nephrotomy incision, the most frequent causes of such postoperative bleeding are (a) the detachment of thrombi; (b) the septic erosion of vessels exposed in the line of incision, and (c) the bursting open of the nephrotomy wound when the ureter becomes obstructed by the blood-clot.

Makkas collected reports of nineteen cases, and Neuhauser reports sixteen of Israel's cases. In ten of the latter, two patients died after the kidney incision had been tamponed, and in six it was necessary to remove the kidney, with three deaths, in spite of the secondary nephrotomy. Neuhauser speaks of the fact that a severe

hematuria may occur after a pyelotomy, and Eisendrath's case confirms this statement. The danger of hemorrhage either during or after nephrotomy is much greater, however, as Haberer and others have shown, than after pyelotomy. The danger of overlooking calculi, even with a good skiagram, is greater with nephrotomy than with pyelotomy. In the latter, one can palpate every portion of the pelvis and parenchyma bimanually, as previously described. The danger of necrosis of the parenchyma following nephrotomy has no doubt been greatly exaggerated, but it is by no means a negligible factor in determining the method of operation. Pyelotomy is the simplest and least serious method for the removal of calculi lodged at the junction of the ureter and renal pelvis, or for small or moderately large calculi, either free in the ampullary type of pelvis or in a primary calix of a bifid or trifid type of pelvis. Pyelotomy is also rapidly becoming the method of choice for small calculi lodged in the calices of the ampullary type of pelvis. Some operators combine transverse or vertical incisions into the parenchyma with pyelotomy for the removal of larger calculi. It is the best method for removing calculi from one or both pelves of a horseshoe kidney, as well as in bilateral cases, especially those complicated by anuria. Hemorrhage is far less likely to occur either during or after pyelotomy than in nephrotomy. Bimanual palpation of the pelvis and parenchyma lessens the chance of overlooking a calculus. Pyelotomy can be done much more rapidly, and the period of convalescence is much shorter than in nephrotomy, seldom more than ten or fourteen days. Pyelotomy is contraindicated when the kidney is fixed by adhesions or the pedicle is short, or if extensive infection is present. A fistula may persist after operation. The danger in such a condition is very slight, unless one has overlooked some obstruction of the ureteral lumen distal to the pyelotomy incision. A ureteral catheter should always be passed down into the bladder before suturing a pyelotomy incision. The danger of bleeding either during or after operation, from the peripelvic vessels, although slight, must always be borne in mind.

# MISCELLANEOUS

BY

HAROLD N. MOYER, M.D.

## MISCELLANEOUS.

### MEDICAL HISTORY.

**The Medicine of Homer.** The references to medicine in the Iliad and Odyssey have been studied by André Floquet[1] from the point of view of psychology. He endeavors to show that if the work of Homer is a fertile mind, it is because the poet was at the same time a profound psychologist and an admirable observer. In the first book of the Iliad when Homer speaks of Juno he frequently employs the expression "ox-eyed Hera." It may be that this expression means exophthalmus; but it is equally possible that the poet wished simply to imply soft large eyes. Further he speaks of Vulcan as "Hephaestus, lame in both feet." Shall we consider Vulcan afflicted with a congenital double luxation of the hip or merely flat-feet? In the second book Thersites, who endeavored to excite an insurrection against the Achaean leaders, is described as "squint-eyed and deformed, with crooked shoulders meeting on his breast and a few hairs scattered on his pointed head." Technically speaking, he had strabismus, rachitis, and alopecia. When Ulysses struck him, a bloody tumor swelled upon his back beneath the stroke of the golden scepter, evidently a hematoma. In the fifth book Meriones pursuing Phereklos struck him in the right hip, and the point penetrated "into the bone even to the bladder." Homer also noted that an arrow checks the flow of blood which wells up as soon as the weapon is withdrawn. He describes the wounding of Aeneas with a large stone which broke the thigh, tore the "two upper muscles" and the skin, certainly a compound fracture of the upper end of the femur complicated perhaps by a fracture of

(1) Semaine Méd., Aug. 28, 1912.

the pelvis. The poet also notes that in the excitement of the field of battle Agamemnon did not notice his wound and continued to fight as long as the blood was running; but when the blood stopped "sharp pains took away his strength, bitter pains like those which the daughters of Hera, the Eileithyes, send as bitter arrows to the woman in labor." Thus the son of Atreus had to return to his ship. Another passage tells of Eurypylos who wounded Apisaon, prince of the people, in the liver below the diaphragm, and killed him.

In book thirteen Homer shows that an arrow buried in the heart may not cause the immediate arrest of that organ, but continues to move with its pulsations. In the next book Homer speaks of traumatic hematemesis Ajax struck Hector on the chest below the shield near his neck. Hector fell under the shock and when he came to himself and opened his eyes he vomited black blood and fell back again on the earth. In succeeding books the poet relates the effects of blows on the temporal region, fracture of the skull, of injury to the medulla, the thorax, and the vessels at the root of the neck.

In the Odyssey anatomic references are rare and mainly a repetition of those found in the Iliad. The work of physicians in Homer is seldom noted. Although there is little mention of drugs, the use of psychotherapy, of magnetism, and of diet shows that some persons performed some of the functions of the physician.

The frequent expression, "the breath, or the air, leaving the body," as synonymous with death, indicates that the poet believed in the dual constitution of man, the "vital air" sustaining and directing the body, and at death withdrawing from all parts of the body.

The physiologic notions of Homer were vague and limited to some of the functions of a few of the organs. The treatment of wounds was very simple and limited to the removal of the weapon and draining of the blood either by sucking or by pressing with the hand. Hemorrhage was stopped by a charm or incantation. Sulphur seems to have been used as a disinfectant and drugs were known which relieved pain and promoted sleep. The burning of debris and offal served the purpose of disin-

fection. Floquet remarks that one may be astonished at first view to find that in Homer nothing is said about mental disease. This omission is to be explained by the fact that Homer was representing heroes and demi-gods who should by nature be free from psychic as well as bodily defects.

**The Pathography of the Julian Dynasty.**[2] Plutarch, Suetonius, and Appian relate that Julius Cæsar suffered from epileptic fits. Perhaps it was epilepsia tarda arising from arteriosclerosis, especially as Cæsar's father died of apoplexy (*cf.* Plinius, *Hist. nat.*, VII, 54), although genuine epilepsy is not quite out of the question. But certainly it was not alcoholic epilepsy, for Suetonius relates that Cæsar was very temperate in drinking. Cato called Cæsar (Plut. Brut. 5, and Cato min. 24), μέθυσος, "drunken," but this remark only applies to Cæsar's amorous disposition, which is well known through the writings of Catullus, Suetonius and Dio Cassius. If syphilis existed among the ancients, there might be some suspicion that this was a syphilitic epilepsy.

Cæsar's daughter, Julia, was married to Pompey, and is said to have died from the effects of a shock (*cf.* Valerius Maximus, IV, 6, 4). "As they happened to bring home the bloody garment of her husband, she thought they had done violence to him. She fell to the ground as one dead; through the sudden alarm and pain gave birth to a child (a boy, who died shortly afterwards, Vellejus II, 47, 2), and then expired." Partus immaturus, etiology: shock? eclampsia? epilepsy? A case of recurring vertigo epileptica ex aspectu sanguinis is personally known to the writer.

It is doubtful whether or not Brutus was a son of Cæsar and Servilia (*cf.* Appian II, 112.) Nothing, however, is known of Brutus suffering from any mental defect. Plutarch (M. B. 36, and Caes. 69) and Appian (Bell. civ. IV, 134) record that Brutus had optical hallucinations; but, as Schaefer (*Monumenta medica*, 1905, p. 57) rightly says, this must be considered as a "half-waking state" caused by overwork. Valerius (Maximus I, 8, 8) relates the same about Cassius.

(2) F. Kanngiesser in Glasgow Med. Jour., June, 1912.

Augustus, the son of Cæsar's niece, Attica, was weak, cowardly and malicious. He wrote an autobiography, known under the name of "Monumentum Ancyranum." It is full of all kinds of boastful and presumptuous assertions; amongst others, that in many respects he would serve as an example for the coming generations. Vellejus (II, 100, 3-5) describes his daughter, Julia, as follows:—"Nihil quod facere aut pati turpiter posset femina, luxuria libidineve infectum reliquit." Her daughter Julia was also a "dégénerée," according to Tacitus and Suetonius. It is not improbable that Ovid was also implicated in the immoral doings of this grandchild of Augustus, for he was banished the same year as she was (*cf.* M. Schanz, *Geschichte der römischen Litteratur*, München, 1892, II, p. 128-129). Julia's brothers, Cajus and Agrippa Postumus, who both died young, were described by Vellejus (II, 102 and 112) as being depraved and vicious. Vellejus (II, 79) describes Agrippa, the husband of Julia major, and father of her children, as being a man of "noblest virtues"; nor is anything known against Scribonia, the mother of Julia major. The degeneration must, therefore, be laid to the blame of Augustus, or to the Julian race, especially as Appian (Bell. civ. IV, 58) mentions that Sextus Julius, a young relation of Augustus, was also a "dégénerée."

Augustus married Livia after he had turned out his wife, Scribonia, on her account. Tacitus describes the character of Livia unfavorably. She had two sons before her marriage with Augustus, namely, Tiberius and Drusus major. The last years of Tiberius' reign are notorious, and his son, Drusus minor, was lascivious and cruel. On the other hand, Vellejus praises the brother of Tiberius greatly: "Morum dulcedo ac suavitas et adversus amicos aequa ac pàr sui aestimatio inimitablis fuisse dicitur." The wife of this Drusus major, Antonia minor, a daughter of Marcus Antonius and Octavia, is described by Plutarch (M. A. 88) as excelling in virtue and beauty. Drusus major, according to Valerius (Maximus IV, 3) knew no other woman except his wife and she rewarded her husband's love with staunch fidelity.

One of their sons was Claudius, his grandparents on

the mother's side being Marcus Antonius and Octavia. The latter, a noble woman (Plut. M. A. 31) was a half-sister of Augustus. Both were descended from Gnaejus Octavius, but Octavia's mother was Ancharia, while Augustus' mother was Attia. But the relationship of the Antonian race with the Julian was further augmented by the fact that the mother of Marcus Antonius was a Julian, the sister of Lucius Cæsar.

Marcus Antonius' father is described as being such a great philanthropist in spite of his limited income, that his wife Julia, an excellent and virtuous woman, often had to check him (*cf.* Plut. M. A., 1, 2, and 20). The father's generosity was further transmitted (43) in the form of extravagance in the son, Marcus Antonius, and the grandchild Antonius (28). Seneca (Epist. 83) describes the notorious proscriptor, Marcus Antonius, as follows: "What was it that destroyed Marcus Antonius, this great man of extraordinary talents, but his love for Cleopatra and wine. Inexcusable it was that he drank; still more inexcusable that when drunk he was cruel." According to Plutarch (37 and 67) Cleopatra exercised an hypnotic influence over Antonius. Further, Plutarch remarks (10) that Cleopatra had to thank Fulvia for Antonius' submission to woman's ruling, for it was from her that Cleopatra received Antonius tamed and ready to be ruled.

The emperor Claudius resembled in many respects his grandfather, Marcus Antonius. He also was ruled by women, was cruel and drank. "This Claudius, who looked as if he could not scare a fly, killed as lightly as he threw a die." He had a peculiar gait (incessus insolitus); he dragged his right leg and shook his head constantly. (Tic convulsif? Tremor nervosus aut alcoholicus?) He stammered (sonus perturbatus, vox confusa, rauca, implicata; *cf.* Seneca, ludus de morte Claudii, V and X). His feelings towards his sister, Livilla, do not seem to be quite blameless (*ibidem* viii). His depraved wife Messalina, who further was remotely related to him, bore him an epileptic son, Britannicus. It is a well-known fact that drunkards' children are often epileptic.

Germanicus, Claudius' brother and Caligula's father, was highly accomplished and very popular on account of his affability and kindness of heart (*cf.* Tacitus, I, 7, 33; II, 13; and Suetonius, Caligula, 3). His wife, Agrippina major, the mother of Caligula, was irritable; but her chastity and her love to her husband gave a better light to her hasty temper (Tac. I, 33). Germanicus and his wife were related as great-grandchildren of Augustus' father, Gnaejus Octavius. Agrippina major was a daughter of the notorious Julia, the daughter of Augustus. Germanicus was the brother of Claudius, and grandchild of the proscriptor, Marcus Antonius. Probably the cause of Caligula's depravity is to be found in such consanguinity.

The life of Caligula has been the subject of very careful historical study by L. Quidde, Munich. Here I only wish to mention that, in addition to Suetonius and Dio Cassius, Seneca also has described Caligula's cruelty (de ira, II, 33; III, 18; de benef., II, 21). In his writing (Contum. acc. sap. xviii, 1) Seneca thus speaks of Caligula's appearance: "The abusive Caligula was 'ipse materia risus benignissima.' He was horribly pale, had the face of an old man, with gloomy, deep-set eyes. His head was 'deformed' and bald, except for a few scanty hairs. His neck was covered with bristles. He had thin legs (a heritage of his otherwise handsome father; *cf.* Suetonius, 3), and enormous feet."

After having investigated the original historical sources, my opinion is that Caligula's "Cæsarenwahnsinn" was an epileptic insanity of a paranoidal form.

**Seventeenth Century Graft.** That the exploitation of the sick, even in public institutions, is not an exclusively modern phenomenon, may be seen from the following complaint made by a soldier to his lawyer regarding conditions in the regimental hospital. W. Haberling[3] states that the following quotation comes from a Spanish book of directions for the regulation of military service, translated into German by the order of King Friedrich Wilhelm I. It appears from the article preceding this complaint that the regulations were excellent and, if

(3) Deutsch. med. Wochenschr., Aug. 29, 1912.

carried out, would have secured very satisfactory conditions; but, as in some more modern communities, the practice differed from the ideal.

"This, my good friend, is an ordinance that deserves to be treated with greater respect than the doctors and their assistants are accustomed to give it. For if anything is fitted to cause a soldier to feel dread it is the thought of a hospital, to say nothing of going there when sick or wounded. I have been through this school with all its painful secrets. Often I have lain in the hospital with hundreds of my regiment, when I was a common soldier, and so gained some idea of human wretchedness. The royal ordinance is that the wounded or sick soldier shall receive pay in money. Those in charge of the hospital know this regulation well and prefer that the wounded or sick die as soon as possible so that they may get the money. They give their care to that end, for they calculate that the king can easily get enough new recruits everywhere. Further it is provided that good beds and linen shall be provided for the sick; but the wool for mattresses is not yet shorn and the flax for the linen has not been spun. The money is of more value to the overseer who puts such things into the account as used up. The poor wounded or sick soldier must meanwhile trust himself to the bosom of mother earth, even if he have a wound fever or other heating sickness; and the heaven must be his foster father. When fortune favors he may get a bundle of straw and an old quilt. When these are lacking he covers himself with his mondour, his pillow is his cartridge-box, his night cap his hat. Under this covering he may sweat until his teeth chatter. It is also provided that the necessary provision of food and drink shall be made for sick and wounded soldiers; but, unfortunately, these wretched persons get only thin soup, while the fat and the chicken are eaten by the overseers with whom the doctors and the surgeons live in comradeship so that they can make a correct report to the head overseers of the expenditures. According to their opinion, wine is of no use to the sick and wounded because it may cause inflammation; but they must drink the more so they better can stand the smell of the sick.

The nurses too often get such a headache that they lie down by the patients and sleep off their spree while the sick and wounded lie without help. The royal instructions provide for competent physicians and surgeons and their attendants. But where would they get such? So they simply appoint as field doctors and surgeons fellows who have been banished from the cities on account of their unlucky treatment or who have been forbidden to practice, or who resort to the army because they think they can make experiments on the poor soldiers, who, whether they are shot or die under the hands of a surgeon, can be replaced by recruits by the use of so much coin. If these fellows come into this or that regiment for their bread and are entrusted by the general with a regular salary, they quickly learn how so much the sooner to deprive the soldier of his bread. When there comes an action, or battle, they bring the wounded into the hospital, or better say the judgment place. There is no need of too great deliberation. The doctors and surgeons attend to their appointed art; a judge is present, a doctor is the auditor; he breaks a staff to give consent and the surgeons execute the judgment. The knife chest is open and it is, 'cut off the arm,' 'cut off the foot,' or 'cut off the hand'; why not the head, so at least the poor wounded man would not need to suffer so long."

**The Times of Harvey.** Characteristic aims of the science of that day were the transmutation of the baser metals into gold and the discovery of an elixir of life The metals were supposed to be compound bodies. Gold was believed to consist of sulphur and mercury and it was thought that if the real proportion could be found the noble metal could easily be produced. Astrology was thoroughly believed in. Witchcraft was recognized by everyone. The church condemned heretics and the state carried out the commands of the church. The proscription of heretical writings extended to scientific articles, so that Harvey was obliged to go out of England to find a publisher. That his prosecution as a heretic might easily have resulted was proved, says S. M. Chisholm,[4] by the keen opposition that Harvey's discovery encountered

(4) Jour. Amer. Med. Assoc., March 8, 1913.

throughout the whole of Christendom. The laws against unlicensed printing were at this time enforced in all their rigor; and no adequate argument had yet, in 1628, exposed their iniquity. Moreover, while in England there was less virulent antagonism to Harvey's theory than on the Continent, yet this theory was so essentially revolutionary that the authority of the Star Chamber must have been invoked for its suppression and for the punishment of the printers, if they had been within the jurisdiction of the English courts of law.

In the seventeenth century the works on natural history contained descriptions of the unicorn, the dragon, the basilisk and other fabulous monsters, which had constituted the folk-fauna of medieval romance. Ambrose Paré did not doubt the existence of the basilisk. He even gives a drawing of the monster with his description of it. These works stated seriously that at the approach of winter the humming-birds clung to the branches of the trees by the bill and there died; that the sun and the spring rains revived them and they detached themselves and flew "about their business." The swallows spent the winter in the mud at the bottom of rivers and lakes, whence they were sometimes dragged to the surface in fishermen's nets. In the year 1663 the Thames was frozen over, and booths were erected and games played on the ice. Pepys records that large holes were dug and nets of great length spread under the ice, wherein at a draught from 130 to 170 barrels of fish were taken. "Swallows are often brought up in the nets out of the mud from under water, hanging together to some twig or other, dead in ropes, and brought to the fire will come to life."

Burton, writing in 1625, speculated whether the peak of Teneriffe was 70 miles high or only 50. Its actual height is 12,192 feet. Vicente Espinel, who died in 1634, believed that the water in Spain was lighter and more easily digested than that in Italy, "because the latter contained more moisture." So in "Purchas His Pilgrimes," published in 1625, we read, "Some of our merchants have weighed the water at Aleppo and ours in England, when they have come home, and do find

their water lighter than ours by 4 ounces in the pound; and the lighter the water is, the more pleasant it is to drink, and goeth down more delectably as if it were milk rather than water."

They declared that since the heat of the sun in England could draw the water out of a saucer, doubtless in torrid countries its more vehement heat could also draw up wheat and other grains, and even draw the milk out of a cow; that sorcerers could sell winds to sailors by the help and favor of the devil, who is called in scripture the Prince of the Air (Ephes., ii, 2), and that rock crystal was nothing but snow that had been long frozen. They argued that the land floated on the surface of the sea like an island; and that there was more land than sea they proved from the passage in the book of Esdras, in which it is said that God gathered the waters into the seventh part of the earth and dried up the other six parts. They similarly believed that only the superficies of the earth was land, and that the waters bore up the earth, for the reason that the psalmist says (Ps. xxiv, 2), "He hath founded it upon the seas and established it upon the floods." Thus rivers have their origin from the sea, "which is the fountain-head from which all fountains have their springs." The argument was final that drew its proof from the Scriptures.

There were thought to be three spirits which inhabited the body, the natural spirit whose seat was the liver, the vital spirit whose home was the left ventricle and the animal spirit which dwelt in the brain. The natural spirit pervaded the venous blood, the vital spirit was carried by the arteries, and the animal spirit coursed through the nerves, which were tubular in life though closed after death. The liver was considered to be the seat of anger, the spleen that of envy, and the heart that of love and courage. The four humors which Hippocrates discovered and named still ruled the body. These humors were blood, phlegm, black bile and yellow bile. The spleen was the seat of the black bile and melancholy was a disease of the spleen; the liver was the seat of the yellow bile. The nasal mucus was regarded as the condensation in the brain of the vapors

which mounted from the body. Digestion was thought to be produced by the innate heat of the stomach. It was a kind of cooking, and was in fact called coction. As for the physiology of the brain, it was comprised in a few words: "The three principal faculties of the mind, the understanding, the imagination and the memory, reside in the different ventricles of the brain, the imagination having its seat in the forepart, the memory in the hinderpart and the judgment or understanding in the middle." This, is, of course, a philosophic and not a scientific conjecture.

The distinction between philosophic medicine as inculcated by the followers of Galen, and scientific medicine as introduced by the use of experiment and observation, finds a curious comment in a question propounded by Charles II to his courtiers, "whether a vessel of water would gain in weight by putting a fish into it." Long and hot the discussion lasted, and the conclusion was finally reached that a live fish would not increase the weight of the vessel, but that a dead fish would. This was philosophy. Long afterward it occurred to some skeptic to test the conclusion by actually weighing the vessel under these different conditions. This was science. Bacon, in opening this new path to the acquisition of knowledge, pointed out with clear insight the methods which ought to be followed by medicine—careful observation, careful study of the anatomy of the normal and diseased body and of the living animal.

**Autobiographical Notes of Dr. Bowditch.** Some interesting medical reminiscences of the late Henry Ingersoll Bowditch, M. D., of Boston, are recorded by V. Y. Bowditch.[5] The critical genius of Louis in promoting the numerical method of observation is described: "At the reading of my first paper before the Societé Médicale d'Observation there were, I think, about twenty seated at a table of horse-shoe form. Each one had paper and pencil before him. Louis, in the center of us, presided. I gave the final summing up of the paper's short-comings. It was one of the sacred rules that each one should feel himself bound to notice every deficiency in the 'Ob-

(5) Boston Med. and Surg. Jour., Oct. 31, 1912.

servation' presented, and to give openly his criticisms. Anyone who, fearing to injure the feelings of the writer, should neglect this criticism would be deemed unworthy as a member. Any one 'thin skinned' enough to be hurt by the severest examination was considered a fool, totally unable to appreciate the fine tonic effect of a pure, friendly, but sharp, criticism from others, all equally desirous with himself of arriving at sacred truth. How well do I remember my first ordeal and Louis' pungent *critique* upon a certain part of my paper, and his conclusion; that 'as Mons. Bowditch had not recorded certain data about the heart he might as well have omitted all mention of that organ.' I thought then and I still think that meeting one of the most refreshing and invigorating I ever attended. It was really an intellectual 'bitter tonic,' and I was soon feeling prepared for another trial, with the determination to out-do myself. Louis, dear friend, as he was, seemed to fear that the criticisms had, perhaps, been hard for me; and before the next meeting was called to order, he smilingly said, 'Well, my dear, we attacked you severely last evening; but you must remember that we never can criticize anything that is not good.' Politesse Francaise! qu'elle est aimable!"

He wittily alludes to a "romantic experience" with a case of Diaphragmatic Hernia.

"A spice of what I call the 'romance of medical practice' is connected with this pamphlet of 77 pages, which I prepared *con amore* and did not know how to publish until my friend, Dr. J. C. Dalton, the eminent physiologist, saw it in my hands and begged me to allow him to print it in the Buffalo Medical Journal, of which he was Editor. The 'romance' of it is as follows: In going with a class of students around one of the surgical wards of the Massachusetts General Hospital in order to study healthy lung and heart sounds, I observed a young man lying down who recently had received a serious shock from a fall. As he was not suffering acute pain from the accident, I said to the students, 'I am going to see whether the heart sounds are affected.' On ausculting the left side of the chest, I was astonished that instead of the beatings of the heart I heard noth-

ing but sounds, as over the abdomen, of air in the intestines, while the heart was fairly dislocated to the right breast. Jumping too readily to a conclusion, I said, 'As the middle of the back is the seat of the injury, the diaphragm is probably ruptured and the intestines have fallen into the left thorax and now occupy the whole space usually taken up by the left lung and heart.' Of course, it was of great interest to have an autopsy, when the patient died a few days afterwards, but permission was refused. So, late at night, by the light of a full moon, I entered the window of the autopsy room and by the same illumination found what the absence of severe thoracic symptoms ought to have led me to suspect—instead of a recent rupture of the diaphragm an almost complete absence of the left side of that important muscle. The case interested me very deeply, and I looked in books and journals, American and foreign, for others similar. Between 1610 and 1846 I could find only eighty-eight cases. These I tabulated according to the 'numerical method' of my dear master Louis, and tried to extract from them all the truths they contained, anatomical, symptomatic, and causes, with diagnosis and prognosis as to the duration of life and treatment. I had a most delightful work, away from all the cares of common and professional life. I knew I was doing what had not been done before, and I knew that I must necessarily make a compact expression of the truth on the subject which would be worthy of respect and useful to any physician who should meet such a case."

He relates how thoracentesis came to be performed with an exploring trocar and suction pump, an operation which doubtless brought Dr. Bowditch's name into prominence more than any other single work of his medical career.

"The history of my connection with this operation is as follows: I came from Europe holding the general views of the profession, viz., that it was not to be performed save in the most severe cases and generally when nature herself was 'pointing' as in abscess in other parts. But I was led, after a few years of practice and

of seeing autopsies at the Massachusetts and Chelsea Hospitals, to believe professional opinion incorrect. I saw not a few cases of pleuritic effusion end in death and nothing was found but simple serum filling one pleura without a trace of disease elsewhere. I said to myself, 'Cannot surgery be called to the relief of these sufferers?' I well remember one case, which I was sure was about to terminate fatally if relief were not obtained, and I urged the surgeon (one well-known and capable, and willing to be a surgeon in all other cases which were deemed feasible and right by the profession) to plunge into the chest a common trocar and, perhaps, save a life which otherwise was surely going to perish. He positively declined. After some months this patient died, worn out; and we found the left side of the chest (pleural cavity) stuffed full of simple serum. Not a trace of inflammation of the parts was found, or of disease elsewhere. This case and others like it made a deep impression, but I had no case under my own care. Moreover, I shrunk from surgery, as painful to me. In 1848 I had a patient in my charge as one of the attending physicians at the Massachusetts General Hospital. He had one side of the chest distended, following acute pleurisy. On a consultation held by the physicians and surgeons I was in a minority of one. The others refused. No operation. Death occurred after months of suffering. Soon afterwards, having another case under my charge at the hospital, I determined to ask for no consultation, but to take the responsibility of having the operation of thoracentesis done. And it was done well (as always was the case with Dr. John Collins Warren) by cutting down and making a long incision between the ribs, and all before ether was thought of, so that intense suffering was the result. I said to myself, 'You surgeons must find out some way easier than this, before I shall advise anyone to submit to it.' Meanwhile I was hearing of some few persons operating in Europe with a trocar and canula, and I determined to advise their use in a subsequent case. In 1849 I saw a child with evident effusion in one pleural cavity. She had had several severe attacks

of difficult breathing. I advised puncture, but a surgeon summoned declined to operate, and advised waiting for dyspnoea before doing so. Within forty-eight hours the child suddenly died in another fit of difficult breathing. I was allowed to plunge in a trocar after death, and pure pus gushed out. All these events confirmed my idea that an opening should be made in any case, on which I had any opinion to give and that the common trocar should be used and not the scalpel. About this period I heard that Dr. Morrill Wyman, of Cambridge (contrary to the advice of the seniors of the medical profession), had operated with the happiest result and with scarcely any pain with an exploring trocar, to which he had temporarily attached a strong English stomach pump which enabled him to draw fluid and, by turning a valve, discharge it with great ease. That was the instrument I felt, although I had not seen it, which combined all that was needed to make an operation a perfect success—powerful, simple, almost painless, and leaving no opening behind when finished. I determined to appeal to Dr. Wyman, though living in Cambridge, as no one in Boston could or would help me. In 1850, April 17, Dr. Wyman operated for me on one of my patients at Woburn. I then made up my mind that I could not always send four miles for a surgeon and, though the act would be very unpleasant to me, I must prepare to operate. My lessons on auscultation, my 'Young Stethoscopist,' published in 1846-48, had led the profession to think, though a general practitioner, I was interested especially, in thoracic diseases. I must be prepared to do all that was needed in such cases. The occasion came in October of the same year to test my ability to act up to my determination. A seaman from Wellfleet I found with cardiac disease, but also with one pleural cavity distended with fluid. He had terrible orthopnoea. (I should mention that a short time previously, I had had an instrument devised, whereby the canula could be screwed to the pump instead of connected by a cork, as Dr. Wyman had). So fearful was I, however, of ill success in that simple puncture that I took with me a young surgeon, a former

student and friend of my own. To him I confided my fear of ill success and told him that if, at the last moment I lost courage and bungled at the operation, I wished him to take the trocar and plunge it into the thorax '*capulo tenus.*' Fortunately all went well and I had conquered myself, and was a man. From that time to this, May 16, 1888, I have operated on 253 patients, and made 395 punctures. I believe I have contributed towards the reversal of the opinion of the medical public on the subject of thoracentesis in this country and in England. I feel thankful that I have been able to fight (for it was a fight) against ridicule and contempt of able surgeons of Boston who would not believe that one not a surgeon could teach them anything. This opposition was carried so far that one of the Magnates, two years after the innocuousness of the operation and its great value were acknowledged by most other intelligent and unbiased men of the profession, actually caused the death of a little child, to whom he had called me, by delaying in the room below the little sufferer to talk of the 'dangerous' operation. While talking thus, an attendant burst into the room crying, 'For God's sake come up, we fear the child is dying.' We went up instantly, and indeed the last gasp was taken as we entered the room. Thus it is always with Truth—she has to *fight* her way. My antislavery fight had given me some nerve, and this subject of thoracentesis, simple and so beneficial as it seems now, strengthened me still more. I have often in both of these lines of life felt within myself a sort of what the old poets would call a 'divine afflatus,' and when opposition has come I have said to it, 'You must accept this fact whether you will or not. It is God's truth.' ''

## MEDICAL ECONOMICS.

**The British Crisis.** The crisis in the British profession due to the National Insurance Act occurred when the British Medical Association declined the final offer of the government and launched what may be called a declaration of war against the scheme. Many of the reasonable demands of the profession, such as payment for mileage, had not been met. No provision was made for an anesthetist's fee, though the physician was bound to perform minor operations. He thus would be obliged either to administer the anesthetic in addition to performing the operation, a dangerous undertaking, or to pay the anesthetist out of his own pocket. It was pointed out that if the association was defeated those who accepted service would be much better off than at present, while those who resisted would lose. There were certain areas of low-class practice in the country where the terms offered by the government, no matter how bad, were much superior to those under which physicians were working. These men were prepared to work the act because they obtained such an increase of pay that they could not afford to refuse the enhanced offer. However, by a majority of 176 divisions of the association to twenty-four, the final proposals of the government were rejected.

Recognizing that some alternative to the government's scheme was necessary, a resolution was passed by a very large majority advising that the profession treat insured persons on condition that they avail themselves of the right given in the act of "making their own arrangements"; that where a capitation system is adopted the basis of remuneration be a minimum of $2 per annum, inclusive of drugs; that where a system of payment by attendance is adopted such payment be on a scale of fees to be drawn up by the local medical com-

mittee of the association, subject to the approval of the council, the minimum fee per visit being 60 cents; that the general arrangements be made between the insured, or their representatives, and a committee of local physicians; that these arrangements be carried on until such time as the profession adopts some uniform scheme. For purposes of comparison it may be mentioned that the final capitation offer of the government was $1.50, exclusive of drugs, and that in country districts where the physician is allowed to dispense, if there is no pharmacist within a mile, the amount offered by the government, inclusive of drugs, exceeds by 12 cents the minimum suggested by the association.

This decision led to a serious fission in the association. In the decision to reject the act the extreme party proved victorious. The result was that six members of the council of the association resigned. The council is the administrative body of the association and consists of about sixty members. The resignations included some of the leading and most active members of the association. Those members issued a statement to the press that they had resigned their places on the council because the association was committed to a policy which would be seriously detrimental to the present and future interests of the medical profession.

The fission described above divided the profession into two hostile camps, denouncing one another with all the virulence of party politicians. As the fateful day, December 31, for accepting or refusing service drew near, it became plain that the number of those willing to serve was increasing. Up to the last moment meetings convened by the British Medical Association were held and a strong attempt was made to dissuade men from joining the panels. These measures failed to influence a considerable number who were in favor of working the act. Their numbers have day by day been reinforced by waverers of one kind and another, some of whom feared the loss that would be inflicted on them if they refused, and the government obtained others to do the work. An attempt was made to reassure them that the act would prove unworkable and that the govern-

ment in the end would have to come to the association's terms. In the meantime the press of the two great political parties endeavored to make as much capital as possible out of the situation. The Conservative organs backed the association and described the act as unworkable and an outrage on the profession; the Liberal organs described the act as a great success, and said that the physicians' opposition was due to political motives and was collapsing.

Mr. Lloyd George, Chancellor of the Exchequer and the author of the act, stated that he had sufficient physicians for three-fourths of the insured population; 10,000 doctors had gone on the panels and more were rapidly coming in. In areas in which the panel could not be completed there were three alternatives. If the panel was all but complete it could be closed and the physicians on it asked to engage a sufficient number of assistants or to take a sufficient number of partners so that the panel would become complete. Another method was to appoint new men on the panel who were willing to start in an area in which there were not sufficient physicians willing to work. A third alternative was a salaried service, for which the physician would be paid $2,500 a year and allowed to take private practice. In Bradford the physicians refused to go on the panel; but when the local committee advertised for outside physicians at this salary, the number of applications was so great that it was realized that opposition would be suicidal, and the local physicians agreed to serve.

In a statement of the present policy of the British Medical Association it was stated that the report of the government on the present earnings of physicians shows that they receive $1 per annum for each of the population for 1.8 attendances, *i. e.*, over 50 cents per attendance. The latest offer of the government would provide 17 cents per attendance.

In an editorial the *British Medical Journal* commented on the fact that the profession did not seem to concern itself with the socialistic aspect of the proposal. That was quite true. As the profession consists of men of all shades of politics, it is unwritten law that party

politics must be kept outside its discussions. Therefore the act was considered purely from the standpoint of its effect on the profession. The question whether it is right or wrong for the state to provide (partially provide in this case, as the scheme is contributory) medical attendance was not considered, but simply whether it proposed to pay the physicians adequately. But though politics was not mentioned, it was inevitable that, as just explained, it must have to a certain extent influenced men's minds. The crisis has taken the worst possible form for the profession. Union has been replaced by disunion and many men are threatened with loss or ruin. In districts where the professional feeling is strongly against working the act, the men who work it will probably be ostracized and refused all cooperation in their work. The ill feeling between the two sections of the profession is so great that many old friendships will be severed. In most of the country districts there was no difficulty in forming the panels. Where the physicians were recalcitrant the threat of the government to introduce outside men proved sufficient. In London, however, it was difficult to find enough men to form the panels without assigning to each physician an excessive number of insured persons. In some districts of London there was only one physician to over 3,000 and, in one, to 5,000 insured persons. A strong organization was formed to resist the act and an attempt made to organize a system of medical benefit on lines more agreeable to the profession than the Insurance Act. The free choice of doctor became a slogan and it was hoped that the insured in their own interest would demand to be allowed to make arrangements by which they could have their own doctor. The opposition press took up the agitation and "sandwich men" paraded the streets carrying boards bearing the legend, "Insist on having your own doctor." The dissatisfaction in the medical profession became so great that the British Medical Association decided by a majority of 115 votes to 35 to release the physicians who had signed the pledge. The difficulty in London, however, continued.

The National Insurance Practitioners' Association—

a body of physicians formed for the purpose of working the act—has issued a long manifesto emphasizing the necessity for organization and pointing out that "in many cases the arrangements of the act are experimental and in all cases officially provisional." They offer the use of the organization to the physicians on the panels, acting individually or collectively, in efforts they may desire to make in order to secure such rights and privileges for the medical service as can be granted by the insurance commissioners' committees. Suggestions for simplifying the records required from physicians are now being considered. Complaints have already been made that the clerical work is proving onerous. The adoption of a list of stock mixtures and preparations in constant use, such as can be found in every hospital pharmacopeia or the codex, is suggested as a means of lightening the labor of prescribing and the cost of dispensing.

The London Letter[6] of February 1 gives the following account of the National Insurance Act in operation: Considerable difficulties have arisen in the commencement of the working of the medical benefit part of the National Insurance Act. This is partly due to the attempt of the British Medical Association to boycott the act, and the resultant rush which followed failure to do so, and partly to a large amount of clerical work thrown on the doctors. Much of this appears to be unnecessary and a manifestation of the cumbrous officialism or "red tape" which characterizes all government work. Doctors' offices are besieged by long queues of insured persons for the purpose of having "their cards signed." They apply to be registered on the list of a physician whom they may choose from the panel; this is done by the physician writing his name on a red card supplied to the insured persons by the government. The physician can examine them or not, and accept or reject them as he pleases. The work entailed by this registration alone has been so great that professional work has been seriously hampered. In one case a scandal occurred as the result of the administration, without proper examina-

(6) Jour. Amer. Med. Assoc., 1913.

tion, of a mixture for dyspepsia to a man suffering from strangulated hernia. Later he was removed to a hospital and herniotomy was performed too late. At the inquest the physician said that he was too "rushed" by the insurance act to have time to attend to his patients properly—an excuse which was accepted. This congestion of work is of course only temporary and due to the sudden putting into operation of a system of enormous magnitude, full of complicated details. But the combrousness of the regulations is a different thing. For every patient treated the physician has to make three copies of the prescription—one to retain himself and two to send to the pharmacist, who retains one and sends the other to the government. It is true that the physician is supplied with prescription books and carbon papers, so that he need write the prescription only once, but sometimes the process is not quite successful. Physicians are also supplied with huge daybooks. In these no fewer than ten entries must be made for each patient, no matter how slight the ailment—name, address, society number, sex, age, occupation, illness, etc. The pages are perforated so that a portion containing the name of the complaint but not of the patient can be torn off. This is to be sent to the insurance commissioners for statistical purposes. The clerical work is so great that many physicians after a hard day's work have to sit up till the small hours of the morning making entries in the book. Already a movement is on foot among practitioners for the purpose of having the regulations altered so as to simplify the clerical work.

Much discontent has arisen in connection with the working of the insurance act in consequence of the enormous number of persons which some popular physicians have on their lists, many more than they can attend to properly. At present there is no limit whatever as to the number. An insured person can select any physician he likes on the panel subject to the physician's consent. On the London panel the following figures show the enormous numbers which some doctors have: Three have from 5,000 to 7,000; three from 4,000 to 5,000; twenty from 3,000 to 4,000; eighty from 2,000 to 3,000,

and ninety-three from 1,500 to 2,000. Mr. Rocklif, secretary of the Joint Committee of Approved Societies, representing over seven million insured persons, brought the matter before the London Insurance Committee. He considers that the crying necessity for a limit on the number of patients a doctor may undertake is proved by countless letters which he has received complaining of patients having to wait for hours in physicians' offices and then getting hurried, inadequate treatment. In one case the insurance committee received three certificates from the same doctor showing that the patient was suffering from a different disease each week. The examination had been so hurried that the diagnosis was altered each time. Another difficulty is in the refusal of physicians to see insured persons on Sundays. The income derived by the physician with so many patients is large; thus for 7,000 persons he receives $12,500 a year, and in addition has his private practice. It must be remembered, however, that with such a large practice the physician keeps one or more assistants. Another complaint is that physicians with these large practices frequently keep three or four lock-up offices, each of which they visit for an hour or two daily, but where it is impossible for the insured to receive attendance at any other time than the specified hours and at night. The insurance committee for London, therefore, has adopted by a large majority a resolution that it is undesirable that any physician should undertake the treatment of more than 2,000 insured persons. In consequence of the great increase of malingering it has been decided to appoint a medical referee who will examine cases referred to him by the committee. It is complained that medical certificates of inability to work are given much too easily and that in several societies the amount of sickness claims made on the funds greatly exceeds the estimate made by the government actuaries. In some societies the claims by women exceed the estimate by no less than 50 per cent., and by men by 20 per cent. It has been calculated that if only 1 per cent. of insured persons were malingerers, it would cost the approved societies at least $250,000 per week.

Though many of the preliminary difficulties which arose in the inauguration of the national insurance act have been overcome, friction is developing in many ways. A curious situation has arisen in South Wales. In certain areas "medical aid societies" have been formed, which employ whole-time physicians at a salary, importing them into the district. Arrangements are made by the societies with the insurance committees to receive the annual sum provided for the medical attendance of the insured persons. These payments are pooled and the physicians are required by the society to attend not only the insured persons but also their families for the capitation fee of $1.50 provided for the former only. Naturally the scheme is opposed by the medical profession. There is no security that an insured person will receive medical benefit of the quality provided by the ordinary panel. The South Wales and Monmouthshire branch of the British Medical Association has passed a resolution protesting against the condition and calling on the staffs of the various hospitals to refuse medical recognition to physicians who accept such appointments.

Another curious situation has arisen in consequence of the refusal of many members of the British Medical Association to follow the order given by the representative body to decline to work the act. In the St. Pancras and Islington Division of London those members who took that course have received a letter informing them that at a meeting of the division it was resolved to take their conduct under consideration; and if it is found in the opinion of the division to be detrimental to the honor of the association, the question of their expulsion will be considered. They are asked to attend a meeting in order that they may put their case before the division.

Under date of June 7 the correspondent writes:

As shown by recent by-elections (May, 1913), the insurance act is very unpopular. Government interference with the friendly societies which, during more than half a century, have evolved a plan of providing benefit for illness, is irritating to a people who have always preferred to do things by voluntary effort rather than by

the compulsion of the state. The immense undertaking of providing a sick allowance and medical attendance for twelve million persons has been attended with considerable friction. The red tape of bureaucracy renders action painfully slow in a matter in which promptitude is required. Sick persons complain that before receiving "sick-pay" they have to wait as long as three weeks while various blanks are being signed and inquiries made, whereas under the friendly society system this process occupied only a few days. Again, the number of insured persons entitled to free medical attendance who nevertheless decline it and prefer to pay the physician of their choice who is not on "panel" (that is, has not accepted service under the act) is very large. In London it is 400,000. At present they lose the advantage of the capitation feed provided for them. The government intends to bring in an amending act to remedy these and other grievances. The British Medical Association is taking the opportunity of bringing forward a number of professional grievances for remedy. Thus if an operation has to be done under an anesthetic no fee is provided for the payment of the anesthetist; the physician has to provide one himself. This is an encouragement for him to administer the anesthetic as well as to operate, which is admittedly a dangerous course. The association also objects to the regulation which obliges insurance doctors to attend patients for illnesses, such as venereal diseases, caused by their own misconduct. In the contract practice of the friendly societies a man was not entitled to attendance under these conditions. Another condition included in medical benefit, which was also excluded in the contract practice of the past, is miscarriage or abortion. The association also requests that the physician may be allowed to make a small charge for night calls so as to discourage unnecessary calls and that when an insured person has an income exceeding $800 he shall not be entitled to medical attendance under the act, but be required to make his own arrangements. At present persons with an income of $800 are eligible for insurance, but once insured they remain so although they afterward attain an

income above this. The association is strongly in favor of the appointment of medical referees to whom cases of alleged malingering shall be referred.

**Indigent French Physicians.** The Paris Letter[8] describes the attempt made by a number of physicians some years ago to establish a house of refuge for aged and destitute physicians. By donations they were enabled to purchase the little property of Brézolles, a few miles from Dreux (Eure-et-Loire). Thus three years ago the Maison du médecin was established to receive unfortunate physicians who through ill luck, sickness or improvidence found themselves in distress at the end of their career. Besides the kitchen, dining-room and sitting-room, the house at Brézolles has six sleeping-rooms. The most unfortunate are kept free of charge, but those who are able pay rent. The house is opened to all French physicians, civil, military, naval or from the colonies and their wives or widows. A special commission decides which applicants shall be admitted, giving preference to those who are oldest and who have suffered the greatest misfortune. For two years the Maison du médecin has taken care of ten pensioners, but as there are forty on the waiting-list, and as they cannot be taken care of owing to lack of room, the association is trying to enlarge the place or to buy another. For this purpose they are conducting a charity sale on the premises of the Faculté de médecine and have already raised the sum of 35,000 francs ($7,000).

(8) Jour. Amer. Med. Assoc., Dec. 28, 1912.

## SOCIOLOGY.

**Industrial Employment of Women and Number of Girl Babies.** H. R. Jones[9] has attempted to determine the justification for the belief that the proportion of girl infants is much larger in those districts where many married women are employed in factories than elsewhere. From various sources he has compiled statistics which lead him to the following conclusions:

1. That the employment of married women in industrial occupations tends to diminish the birth-rate.
2. That such employment tends to the birth of a larger proportion of girl infants.
3. That low birth-rates tend to the birth of a larger proportion of girl infants.
4. That the rate of infantile mortality is higher as the proportion of employed married women rises. The question naturally follows whether the higher mortality is due to the quality of the offspring or to the environment during the year of infancy or to both factors. To answer it requires a more detailed analysis of the causes of death in infancy than is included in the Decennial Report of the Registrar-General, but it may be pointed out that the mortality from puerperal fever and childbirth is higher in the textile than in the non-textile districts or in the colliery districts, being 6.74 against 5.12 respectively, and therefore the quality of the offspring is likely to have suffered. Lastly, Jones calls attention to the relative influence which the birth-rate and the rate of infantile mortality exert on the number of survivors. With a low birth-rate and a low rate of infantile mortality the number of survivors out of 1,000 infants born is greater than if a high birth-rate and a high rate of infantile mortality prevail. But if the sur-

(9) Lancet, Aug. 10, 1912.

vivors out of the number of births per 10,000 inhabitants be calculated, it is found that the number of survivors is greater with a high birth-rate and a high rate of infantile mortality than with a low birth-rate and a low rate of infantile mortality.

**The Dispensary.** The public at large, as well as much of the medical public, is strangely ignorant of the possibilities of the free dispensary. It is that part of a hospital which reaches, or should reach most directly, the general public, both in its function of giving advice and care to the sick, as well as in its larger function of instructing in methods of life and prophylaxis against disease. It is the one part of a hospital in which students of medicine are able to study those disorders, physical and mental, which they are most likely to meet in general practice.

In order to maintain these functions a dispensary must of necessity be in close connection with a well-equipped institution of learning. The staff should consist of a number of prominent and reliable senior physicians attending at stated intervals for consultation and advice, junior physicians who are active and well equipped men and student assistants for the purpose of history-taking and record-keeping. It should have well equipped laboratories and a department of physiotherapy.

The dispensary ministers to various classes. First, there are the very poor, who ought not to be expected to pay for their services. There are also persons who cannot be called poor, but who resort to the dispensary temporarily when in straightened circumstances. The use of the dispensaries by such patients is far more frequent than is generally imagined. In the properly conducted out-patient department, however, the advice and treatment given is far from free; the patient pays for the services which the dispensary can give him by allowing himself to be used as the subject of lectures and demonstrations to students and physicians. This, one may say, is not much. No, it is not a great hardship. But in another sense it means a great deal. It is often, indeed, usually, very time taking, and there are few of

the poor and ignorant who do not prefer to avoid the waste of time and the lengthy examination by seeking the services of a private physician when they can afford it.

Secondly, there are individuals able and willing to pay a small fee, who yet feel that the physicians in the regions in which they live do not give them the time, the care or the attention that is given them in the dispensary. They believe that the services which they obtain at the dispensary are more valuable than those for which they can afford to pay, and they are willing to offer themselves as the subjects of study or demonstration or lecture, and to sacrifice the necessary time for certain advantages which they conceive the dispensary offers, advantages otherwise out of their reach.

Thirdly, to the better dispensaries, especially to those connected with hospitals or universities, where well-equipped men are in attendance, or where men of real eminence are to be found on special days,—it is not uncommon for physicians who practice among poor people of moderate means to bring their patient for assistance in diagnosis.

During much of the time that Dr. Osler was in Baltimore, says W. P. Thayer,[1] he gave, three times a week, what he called diagnostic clinics before third-year students. In a large room, in the middle of the dispensary, adjoining the examining rooms, he saw several patients each day, before the class. Often these patients presented examples of the ordinary minor ailments, but if any case of especial interest was met with by the physician in attendance, it was set aside for Dr. Osler's clinic. Moreover, not infrequently, physicians practicing among people of moderate means brought to this clinic cases of an unusual character. These patients, by their willingness to offer themselves as subjects for demonstration, obtained the advantages of a consultation with Dr. Osler which otherwise would have been impossible.

The opportunity afforded by a dispensary of the proper sort for occasional consultations of this nature is most valuable to the public, to the physician, and to

(1) Boston Med. and Surg. Jour., Feb. 6, 1913.

the dispensary itself, and Thayer believes that the dangers of abusing its advantages by patients able to pay is slight.

**The Menace of Alcohol.** There seems to be at the present time an awakening of the public mind to the economic menace of alcohol. It is well known that employees occupying responsible positions with banks, trust companies, insurance companies, corporations, commercial houses, etc., are required to furnish a bond to their employers, usually through a bonding company at a rate corresponding to the financial and other responsibilities of the position. It is also well known that employees so bonded are kept under surveillance, not only by the bonding corporation, but by the institution employing them. This surveillance includes their habits, both in public and private, as well as associates, male and female. Late suppers in questionable company, theater parties, automobile rides, time, place and conduct when on vacations or week-end trips out of town are all noted by secret agents of the bonding company, as well as of the employers. Any lapse from strict habits of temperance, or in conduct in general, late hours, questionable companions, or visits to places of shady morals, saloons, all-night resorts, bring in exceptional cases a warning, usually, however, a request for relief from the bond or for the resignation of the employee.

That the public as well as the employers should be safeguarded by a thorough examination of all employees, especially railway engineers, electric motormen, chauffeurs, river and other steamship masters, pilots and engineers, stationary engineers, etc., similar to the examinations for applicants for life, health and accident insurance, and that a definite contract, between employer and employees should be entered into, is the belief of J. W. Wainwright.[2] The family history carefully should be gone into, a searching physical examination made, habits carefully inquired into and noted in the contract, and only such individuals given responsible

(2) Indianapolis Med. Semi-Monthly, April 15, 1913.

positions as fill the requirements. The contract should grant the employer the right immediately to suspend or discharge an employee pending a trial; if it were found that untrue answers had been given by him and entered in the contract, or that he had violated an approved uniform set of rules which he had subscribed to, then the offender should be disbarred. Corporations, public utilities and the like should demand strict temperance at all times and total abstinence during working hours, and should provide an inspection on Monday morning and on the days following holidays.

Statistics compiled for 1905 by medical directors of life insurance companies show that of the causes of adult deaths in a population of 86,874,996 in the United States and its possessions, 85,897 deaths, 5.1 per cent. of all ages, or 7.7 per cent. of the supposed adult mortality at the age of 20 and upward, probably could be declared alcoholic. Vast sums are spent annually in trying to keep employees honest. Why not turn our attention to another much needed reform, that of keeping them sane?

**The Trinity of Social Ills.** A comprehensive view of the trinity of modern social ills, tuberculosis, alcoholism and prostitution, is presented by S. A. Knopf.[3] Statistics of venereal diseases are unreliable. New York City has made them reportable, but private patients are not to be reported by name. Knopf suggests that the same privacy should be accorded the patients in hospitals and dispensaries. It should be specified distinctly by law under what conditions the records of the Health Department concerning communicable and infectious diseases may be inspected, and by whom. Knopf proposes to substitute "social ill" for "social evil," and traces some modern conceptions of the etiology of prostitution. He denies that women are born prostitutes. The majority of these unfortunate women, when they are mothers, work and slave that their daughters may have a happier lot than was their own. Adherent clitoris favoring masturbation, hysteria and mental defects and other morbid causes should be remembered by the

(3) Amer. Pract., March, 1913.

physician. Have every child examined for such defects and let them be corrected if possible. All other factors in the etiology of prostitution are simply social. Child labor, underpaid woman's labor, desertion, misery and poverty are recognized to-day by all sociologists as one of the principal predisposing causes to prostitution, and there is but one remedy for all: child labor must be done away with and the woman who is dependent on her own resources must be enabled to earn enough money to support herself respectably. When such a policy will become universal and not be confined to one State or one country, then the efforts of the United States Government to abolish the white slave traffic will be crowned with success, because there will be no slaves to traffic with.

Last, but not least, let us not forget that prostitution is as much, nay, even more a man's problem than a woman's problem. It is we, the so-called stronger sex, the creators of our social fabric, the law-makers and those who enforce the law, who are responsible for this blot on civilization. The fact that prostitution existed in antiquity is no excuse for its existence to-day. There is much, much for us men to do, whether we are physicians, social workers, or plain citizens fulfilling our tasks as such toward bringing about a happier and saner state in regard to our sex relations and our attitude toward our sisters, unfortunate, but not deserving the name "fallen." But praiseworthy as all such movements are and indispensable for the time being, what would morally benefit both sexes and at the same time tend to do away with the social ill would be early marriages and small families. No child should be brought into this world physically, mentally, and socially so handicapped that its rise to a true, sane, sound, and useful member of society is an impossibility.

Knopf extols redemptive measures such as are used in Waverly House. Fallen women can be reclaimed. Of 300 women who passed through this house, either by self-commitment or on probation granted by the court, 119 have changed their previous mode of life, have become happy, honorable and useful members of society.

Miss Maude E. Miner, an official probation officer, who is at the head of the institution because of her experience and devotion to the cause, has been in constant communication with these 119 girls. Every letter from them expresses their gratitude for having been enabled to leave a life in which they were so thoroughly unhappy. And last, but not least, this place of refuge for those unfortunate women means in many instances freeing them from the men who live on their shame and are so often responsible for their enslavement.

Knopf gives a qualified approval to reglementation, and suggests that the woman who is not diseased be protected by requiring a clean bill of health of all men who propose to satisfy their passions at a public house.

**Preventable Occupational Ills.** The more clearly one sees the whole field of preventive medicine, the stronger the conviction that all the problems are social problems and that they must be solved by social remedies. This is at once evident when we recognize, first, that the responsibility for the conditions that cause these diseases lies with the people and, secondly, that all the power and authority for bettering conditions also rest with society and its agents. It is a popular belief that the control and the prevention of disease are largely a duty of the medical profession. This is not true. The medical profession can and does furnish the technical information as to how disease can be abolished or at least reduced. The physicians can point out the way, but they cannot, of themselves, accomplish anything permanent without public support. This support, this cooperation can come best when the public understands what is needed and why it is necessary. Public education, therefore, becomes an indispensable and a necessary factor in every movement for conserving health. Conservation of health means higher wages and enabling the workers to keep ahead of the increasing price of the commodities of life.

T. F. Harrington[4] enumerates three great unnecessary

(4) Jour. Amer. Med. Assoc., June 7, 1913.

wastes of human life and efficiency, namely: (1) preventable accidents; (2) preventable illnesses, and, (3) preventable deaths. Instruction in prevention is more important than laws for protection or compensation. Undoubtedly the three great factors besides ignorance which promote industrial accidents are defective hearing, defective sight and fatigue. Many failures, both in health and in efficiency, are due to poor sight and fatigue. The influence of the factor of fatigue in causing industrial accidents has not received the attention it deserves. The amount of unnecessary fatigue among all classes is not appreciated. Professor Fisher states that 5 per cent. of all persons in this country are fatigued to a degree sufficiently serious to impair their working powers.

A knowledge of the dangers should form a part of the preparation of those who are to undertake the teaching of trades in the public schools. Preventive medicine has pointed out ways and means which, if employed, will reduce to a minimum many of the dangers arising from these trades. It has designated certain family and individual traits which predispose to the development of definite diseases if the person is subjected to employment at specified trades or vocations. The disregard of this "tendency to diseases" explains the occurrence of many physical breakdowns in industrial life. There are other trades in the pursuit of which physical incapacity is almost unavoidable.

Preventive medicine is able to reduce these dangers greatly, principally by adequate ventilation and light, and by instruction. The efficiency of preventive medicine thus in lessening the prevalence of general diseases is shown in the reduction of morbidity and mortality from tuberculosis. Educational authorities have grasped this fact and to-day great emphasis is being laid on instructing those who in a few years will be the housewives of the community. This brings the problem of prevention of disease and the lowering of the cost of living back to the schoolroom. Here lies the greatest opportunity for teaching the value of health and effi-

ciency rather than trying later in life to reduce the cost of neglect of this instruction. The two terms "value" and "cost" are not synonyms.

Special hospitals for the training of children and adults afflicted with heart-disease offer the greatest promise of so molding lives that each person by a wise choice of occupation and mode of life may be able to live efficiently within his cardiac power. The cost of failure to learn the value of this lesson is inevitable—irregular employment, repeated illness, changing occupations, broken compensation of the heart and, finally complete permanent dependency.

Next is the problem of prevention of diseases of infancy and of childhood. The necessity, as well as the importance, of beginning this prevention early in life is shown by the single fact that one-third of all cases of blindness can be referred to infection and neglect at the time of birth. These sightless babies soon become a burden on the family and subtract much from the possible income by the home care required from wage-earning mothers. Much infection of eyes, nose, mouth, etc., of the new-born can be avoided by the observance of the simple rule in preventive medicine—cleanliness. Many infants, even when born healthy, are sacrificed by either the inability or the unwillingness of mothers to nurse their offspring. The question of infant morbidity and infant mortality is not one of sanitation alone, or of housing, or of poverty merely, but is mainly a question of motherhood. The problem will be solved only when the value of intelligent motherhood is placed above that of philanthropy, of hospitals, of the medical profession and of the state. Neglect and ignorance are, therefore, more important than poverty as causative factors of infant illness and deaths.

From 80 to 90 per cent. of all deaths from gastro-intestinal disease among infants take place in the artificially fed; ten bottle-fed babies die to one which is breast fed. The subject of infant-feeding, therefore, is not to be treated as an ethical question alone, but must be considered as a problem of preventive medicine of far-reaching results. It is an undisputed fact of pre-

ventive medicine that certain vital tendencies, which make for the preservation of the infant, such as immunity against certain infectious diseases, are transmitted through the mother's milk to her child. There is unfortunately a large class of women who can not nurse their infants; but medical experience the world over fails to substantiate the popular belief that failure to nurse the children is due to weakness in the mothers. The decrease in proportion of breast-fed children is due, first, to more frequent occupation to-day of wife and mother outside the home; second, to the exaggerated claims of artificial food manufacturers, and the popular delusion that their adaptation to the physiologic needs of each infant is so simple that the process can be safely entrusted to "little mothers" who, after one or two lessons, can accomplish what the highest trained clinicians, working under ideal conditions of cleanliness and sanitation, fail to attain. Modern dress and modern social life have combined as factors in reducing the proportion of breast-fed infants. Whether these factors will collect their toll on the next generation of daughters remains to be seen. A recent investigation was said to show that only two daughters, out of 480 born to mothers who could not nurse their children, were themselves able to nurse.

The much-heralded influence of poverty, overcrowding and poor housing conditions as factors in infant mortality does not accord with facts. The fact to remember is that the whole problem is a social one. Increased cost of living is not likely to be lessened or altered by laws or mode of life. Such remedies are largely academic. Preventive medicine does offer a cure for the condition in part at least if not in its entirety. It shows how the enormous waste of health, energy, money and life may be curtailed. It guarantees each person who will learn its lessons and who will apply even its simplest teachings an assurance of greater power, greater health, greater wage-earning ability. This means a nearer approach to the normal living standard of each individual, an efficient, healthy mode of life, physically, mentally and morally.

**Fatigue in Industry.** In a consideration of the rôle played by fatigue in industrial conditions, A, White[5] pleads for the recognition of social disease, for a realization that the problem of the health of the workers in the various industries, is a broader problem than the problem of ordinary physical disease. It is a problem which touches the whole of society. White considers the neuroses and psychoneuroses indications of a disease which is not individual, but social. It has been shown by careful analysis of certain cases of these psychoneuroses that the disorder is dependent upon experiences in the early years of childhood, and these experiences, in many instances, are dependent upon the crowded conditions in such cases. Thus the disorder from which the patient suffers goes directly back to social conditions, and these social conditions may or may not be dependent upon industrial conditions. The psychoneuroses, therefore, may become a good barometer of certain social states dependent on industrial conditions. Many of the specific manifestations of illness are outward indications of certain types of social conditions that are undesirable. It will be seen then that a correlation between the work of the psychiatrist, the neurologist and the social worker is possible along these lines.

**Proposed Social Problems.** The solution of the many social problems and a proposed bill, along very radical lines, which would make the medical profession the agent of social betterment and responsible for the guardianship of the community against the continuance of inheritable and communicable diseases, is discussed by H. A. Moore.[6] The clauses relating to education are intended to co-operate with the advanced systems of teaching and to take the normal child at the earliest practicable age, developing and utilizing its entire energy. The plan comprehends the abnormal child and offers it the opportunity for the fullest development of its powers, but it also emphatically specifies that the abnormal child shall in every case be sterilized in order

(5) Amer. Jour. Med. Sciences, February, 1913.
(6) Indianapolis Med. Jour., Dec. 15, 1912.

that it shall not become an instrument for the propagation and maintenance of disease.

The new movement places all contagious diseases upon the same plane, eliminating the secrecy of the venereal evil. It also proposes to make the existence of disease in any form an automatic warrant for the making of the diseased individual a legal ward of the state during the term of the disease. No toleration of prostitution is comprehended. It is the theory of the movement that the social evil can be fought most effectively in the individual by the power of personal supervision over the individual granted to the state.

The bill makes every physician an officer of the State Board of Health. It is provided that the state shall be divided into districts of equal population with a physician assigned to each of these districts, he to have authority for personal inspection of all that the district contains.

Marriage as the legal basis of population is made a public institution under the supervision of the medical officers.

The liquor question, so bitterly fought on the political battle field, is placed upon a wholly new basis. The matter of the dealer in liquor is not considered. But users of alcohol are classified according to their usage of the drug and treated accordingly.

In brief, the plan seems to place the medical profession on the highest plane that it has ever occupied, and to bring it nearer to the ideals of its founder than it has ever been. It is a move toward the brotherhood of man, and while it smacks of paternalism or socialism, it nevertheless, in its results, must tend towards a vast increase in individual liberty, for after all, the greatest personal liberty consists in having free scope for the development of individual ability, and the whole spirit of the new movement is to increase the efficiency of man and mankind.

The sections of the bill relative to veneral diseases contain clauses providing that: "Whenever a health officer shall know or suspect or be informed of the existence of any venereal disease, it shall be the duty

of such health officer to examine such case or cases of venereal disease, and if, in the judgment of such health officer, such afflicted person should be isolated and quarantined in a building set apart for the care and treatment of persons afflicted with such venereal diseases, it shall be the duty of such health officer, and he is hereby empowered, to remove such afflicted person or persons to such building, and all expense of such removal shall be paid by the board having jurisdiction of such cases, out of the general funds of the incorporated city or town wherein such board is established, or if without such city or town, then out of the general funds of such county; and if, at the time of such removal such Health Board having jurisdiction of such case or cases shall not have provided the necessary attendant or attendants, nurse or nurses, to care for such afflicted person or persons, and there be no person or persons present at the time of such removal to care for such afflicted person or persons, it shall be the duty of the secretary of such Board of Health immediately to employ a proper nurse or nurses, medical and other necessary attendant or attendants to care for such afflicted person or persons, and the service of such nurse or nurses, attendant or attendants, shall be paid by such board," etc.

Serious discussion is anticipated over the effectiveness of the clauses relating to the inspection of homes and individuals. It is provided, "That it shall be the duty of all health officers, at least once in every three months, to inspect that part of their district assigned to them by the county Board of Health. They shall personally visit every place of abode, etc., in the district assigned to them; and the premises of every home; and shall examine the sanitary conditions thereof; they shall examine the lighting, plumbing, drainage and ventilation, the water supply and the general cleanliness of all places of abode, public places and places wherein labor of any sort is performed; and they shall report their findings to the county Board of Health in the manner hereinafter provided."

It is also provided that: "Whenever a health officer shall know, or suspect or be informed of any mental or

physical defective within his district whose deficiency is such as to endanger the health of his or her offspring; or any idiot, imbecile, epileptic or person of unsound mind, whose mental unsoundness is permanent in character, or any person afflicted with any incurable disease communicable to offspring, it shall be the duty of such health officer to examine such case or cases, and report in detail such case or cases, and his findings therein, to the county Board of Health."

That section of the bill relating to sterilization will undoubtedly occasion the greatest amount of discussion. As written in the tentative draft this section says: "That the State Board of Health, through the County Board of Health or a majority thereof, shall have power to remove, or cause to be removed, from any place where any person is staying to a proper place designated by such boards, any person reported by a district health officer as being a mental or physical defective, any idiot, imbecile, epileptic, or person of unsound mind, whose mental unsoundness is permanent in character, or any person afflicted with an incurable communicable disease.

"Provided, however, that no person shall be removed under this Act, except after examination and determination by two physicians in good standing and practice, in addition to the health officer reporting such case, that such person is incapable of procreating sound offspring; that the place to which such person so adjudged unfit, shall be removed, shall be equipped with proper nurse or nurses, medical and other necessary attendant or attendants to care for such afflicted person or persons; two (2) skilled surgeons of recognized ability shall be in attendance, who shall examine the mental and physical condition of such person so afflicted, and if, in their judgment, procreation is undesirable, and there is no probability of improvement of the mental condition of the afflicted person, it shall be lawful for the surgeons to perform such operation for the prevention of procreation as shall be decided safest and most effective. But this operation shall not be performed except in cases pronounced unimprovable."

The educational feature as tentatively provided, says:

"That each public school or institution for education of children shall supply to children from the age of ten years until the age of sixteen years, a course of instruction in anatomy and hygiene, including the organs of procreation, and dealing specifically with the common diseases or afflictions of these organs of procreation, such course of instruction to be designed and superintended by the State Board of Health through the County Board of Health."

Another section of the bill, as yet not written into the tentative draft, but considered of prime importance by the exponents of the movement, will relate to the sale of drugs. Under stringent regulation it is feared that "self-treatment" might develop to serious proportions, especially in the case of venereal infections; and to prevent this happening the statute will be so worded as to stop the sale of all drugs employed in the treatment of infectious diseases except upon prescription by an officer of the State Board of Health, or, in other words, by any recognized or licensed physician.

## EUGENICS.

The extension of preventive medicine to include the relations of the present to succeeding generations brings into prominence the theories of heredity which have developed within recent years. The theories of Weissmann and others that germ plasm is continuous from one generation to another and that inherited characters can only be transmitted by the germ plasm have led to the corollary that acquired characters are not transmitted and hence that the effect of the experiences of the parent on the morphology of the offspring is negligible. J. G. Adami[1] protests against this view as not in accord with the facts. He shows that we have evidence that the germ plasm in the germ cell is capable of modification outside the body. If frog sperm be subjected to the action of the *x*-ray and then be used to fertilize ova, the process of development is arrested after a few days and the larvæ all die prematurely. Obviously the germ plasm in the spermatozoa is acutely susceptible to the action of this physical agent.

We have also evidence that the germ plasm in the germ cells is capable of modification during the time that it exists in the body prior to ripening. Tower made the remarkable observation that if shortly before the maturation of their germ cells, ova and sperm, he subjected potato beetles to intense environmental change, to cold and humidity, he obtained offspring widely different from the parents—and what is more the results appear to be permanent, or at least heritable through further generations. The elytra or wing cases of the normal beetles show one pattern, those of the progeny of the cooled beetles show another. When crossed, these altered forms breed true, nor do they lose their acquired char-

(1) Canad. Med. Assoc. Jour., November, 1912.

acters in subsequent generations. Similarly, among plants, Macdougal has shown that in the evening primrose, by injecting certain chemical solutions into the immature ovaries, and so subjecting the oocytes or female germ cells to these chemical agents, he obtained seeds which grew plants, some at least of which departed widely from type: that is, he established new varieties.

These experimental results are strikingly confirmed by investigations regarding the ability of poisons acting on the parent organism to produce premature labor, abortion, and lowered vitality of the offspring in man. Constantine Paul's figures for lead poisoning are cited. Similar results are obtained from alcohol. K. Pearsons' figures for the children of drunkards as compared with the children of the sober population, showing apparent superiority for the children of alcoholic descent, have been refuted by Sir Victor Horsley. Again, Adami registers the belief that alcoholic excess in the parents is responsible for an appalling amount of early death and an increased susceptibility to the poison alcohol. He calls attention to the experimental evidence obtained by Stockard working on guinea pigs. The most crucial test was where the alcoholic male was mated with a normal female, so that the influence of the poisoned blood of the mother during pregnancy was eliminated. There were 24 such matings. Fourteen gave early abortions or were negative, five gave still-born litters (in all, 8 young), five gave living litters (in all, 12 young). Of the 12 living young: 7 died in convulsions soon after birth, and 5 survived. The twenty-four matings yielded five surviving young and when two months old these five survivors were half the usual size. The average litter of the healthy guinea pig is between four and five. There could be no clearer, more positive evidence afforded of the effects of alcohol on the next generation. An accompanying table shows that parallel results are encountered in man.

Clinical experience with the tuberculous has been confirmed experimentally by Carriere who inoculated a series of guinea pigs with the toxins or soluble products of the tubercle bacillus. Here are his results:

(Total number of pigs inoculated?)

| | Still-born. | | Died before 16th day. | | Survived. | | Total Births. |
|---|---|---|---|---|---|---|---|
| | No. | Per cent. | No. | Per cent. | No. | Per cent. | |
| Male and female both inoculated. | 13 | 52.0 | 7 | 28.0 | 5 | 20.0 | 25 |
| Female alone inoculated..... | 7 | 26.9 | 9 | 34.6 | 10 | 38.4 | 26 |
| Male alone inoculated..... | 5 | 16.6 | 3 | 10 | 22 | 73.3 | 30 |

Adami sums up his argument by claiming the following points proved: The essential germ plasm which conveys the heritable characters from generation to generation is not inert and incapable of being influenced, but on the contrary is susceptible to physical and chemical agents affecting the body and circulating in the blood; intoxicants and the poisons of infectious disease have a deleterious effect upon the offspring; they are apt to cause relative infertility, still-births, monstrosities, and imperfect developments, lowered vitality with tendency to death during infancy, instability and imperfect development of the nervous system showing itself in convulsions, epilepsy, imbecility, and insanity; also, with some intoxicants, the offspring are rendered more susceptible to the action of the particular agent which had poisoned one or other parent.

It remains to inquire whether there is any evidence that the germ cells may be influenced indirectly by influences acting on the somatic cells so as to produce the same order of change as had been brought about in the parent. Sumner has shown that if similar broods of young mice be brought up, the one in a warm temperature (about 21° C.), the other in the cold (about 5° C.), they show recognizable differences in growth. The mean (average) length of tail, of feet, and of ears of those brought up in the warmth is distinctly greater than of those kept in the cold. And here is the important fact: the young of the two groups, although reared together in a common room, all, that is, subjected to the same temperature, continue to present the greater or lesser growth of tail, foot, and ear acquired by their parents. Bordage's observation is of the same order: Ordinary peach trees planted in the warm climate of the Island of Réunion or Mauritius from being deciduous gradually

acquire an almost evergreen habit—and now, if seedlings from these trees be grown elsewhere in a cooler climate, these seedlings manifest the same tendency to be evergreen and not deciduous. Of course it may be urged that in both cases the germ cells were subjected to the same temperature changes as were the bodies of the parent individuals, that these are not, therefore, necessarily examples of properties of somatogenic acquirement. This observation is of minor importance, but it serves to show a possible influence of internal secretion. These secretions affect the activity of other organs and it is easily conceivable that they may affect the germ plasm. Evidence is accumulating to prove that influences acting on these organs of internal secretion, conditions acquired by these organs, tell on the germ cells and are apt to modify them so that the offspring in their development show excess or deficiency in the functions of the glands implicated in the parents and that conditions so acquired by the parents reproduce themselves in, and become inherited by the offspring. Along these lines, Adami believes, the direct inheritance of morbid states will most surely be demonstrated.

**Relation of Fertility to Morbidity.** From conclusions drawn from various statistics S. F. Murphy[2] finds that the decline of death-rate and that of birth-rate run parallel and are obviously due to the action of natural causes to as great a degree as to the intentional action of man. He suggests that fertility and morbidity are closely connected as hereditary characters. If one diminishes, the other diminishes in proportion. If a diminished tendency to diseases is inherited, a diminished tendency to reproduction is also transmitted.

**The Decline in the Birth Rate.** A striking phenomenon of modern civilization is the progressive decline in the birth rate. This is so marked in some countries as to constitute a subject of considerable debate and to excite great concern lest an actual loss of population be thereby entailed. That it has not occurred sooner is due to the fact that the lowering of the birth rate is accompanied by

(2) Lancet, Aug. 10, 1912.

a corresponding lowering of the death rate. Despite this compensation the decline has reached a point in France where the population is practically at a standstill, the births presenting no surplus over deaths. According to Traugott Pilf,[3] in 1909 the following numbers of births per 1,000 of population, showing a well-marked decrease of births in the last thirty years, were recorded:

| | Born living. | Decrease in birth rate in 30 years. |
|---|---|---|
| Russia ..... | 48.0 | 1 per cent |
| Austria ..... | 33.6 | 13 " " |
| Italy ..... | 32.4 | 13 " " |
| Finland ..... | 31.3 | 13 " " |
| German Empire.. | 31.0 | 18 " " |
| Netherlands ..... | 29.1 | 19 " " |
| Denmark ..... | 28.3 | 12 " " |
| Switzerland ..... | 26.3 | 12 " " |
| Norway ..... | 26.2 | 16 " " |
| Sweden ..... | 25.6 | 14 " " |
| England ..... | 25.6 | 25 " " |
| Belgium ..... | 24.9 | 21 " " |
| France ..... | 19.6 | 21 " " |

In consequence of the larger birth rate and smaller death rate Germany has been able to outstrip France in population so that while in 1840 the population of the two countries was nearly equal, in 1870 Germany had a fourth more and in 1910 about 60 per cent more. The reduction in the birth rate is more marked in the large cities. The Jewish race seems to face extinction through this cause unless it makes some improvement. Pilf estimates that voluntary restriction of the birth rate, which was formerly confined to the upper classes, is gradually extending to all classes of society so that it is high time that measures be taken to check this menacing evil. The number of children in the families of the various professions has not been definitely determined; but Pilf gives it as his own observation that physicians seldom have more than two children, more frequently only one or none. The same seems to be true of clergymen, teachers

(3) Berlin. klin. Wochenschr., Feb. 10, 1913.

and some similar occupations. The condition among postoffice employees has been statistically determined with the result that the number of children per family has been found to average about 1.77. That some of the reduction in birth rate depends on moral influences is shown by the fact that a rise has been noted in certain quarters after priests and missionaries have preached earnestly on the subject.

Social causes may be assigned for the voluntary reduction of the birth rate. The plan is pursued partly with a view to the comfort or greater luxury of the parents, partly to protect the interests of existing children, preserve estates from being dissipated, and the like. The prevalence of attempts to prevent conception is shown by advertisements in the daily press, by the peddling of remedies and instruments from house to house, by the circulars sent to young bridal pairs, to parents after the birth of the first child and similar indications.

The same subject is discussed by J. Wolf,[4] who shows that this universal phenomenon is a matter of present importance in Germany. He notes the rapid progress of the evil. In Germany the rate of reduction in the period from 1898 to 1901 was 5 per 10,000 inhabitants, from 1901 to 1904, 17; from 1904 to 1907, 20; from 1907 to 1910, 25 per 10,000. He notes the greater decline in the large cities and calls attention to the fact that at the time of the establishment of the empire one-third of the German people lived in cities while now the proportion is two-thirds and of these two-thirds one-half live in large cities. The reduction in the birth rate of Berlin during the last thirty years amounts to 184 per 10,000 while in Paris the reduction has been only 76. Similar conditions exist in the other large cities of the empire.

Wolf finds no indication that the lowering of the death rate will long compensate for the diminishing birth rate. The lessening of the death rate must soon reach its limit. Even in case of continued improvements in sanitation which permit the wiping out of the greater part of the infant mortality, the death rate at other periods of life will be increased. There seems to be no immediate pros-

(4) Berlin klin. Wochenschr., Dec. 2, 1912.

pect of an increase of the birth rate. It is a curious fact that the birth rate is influenced by such elements of culture as learning to read and write. Where there is the greatest illiteracy, there is the highest birth rate. The religious profession exercises an influence on this social movement. The highest birth rate is seen in the adherents of the Greek orthodox church in Russia; the next degree is found in the Roman Catholic countries, a moderate reduction in Protestant communities, and the greatest decline in indifferent religious or atheistic communities. The influence of urban life favors the reduction of the birth rate by loosening the marriage tie, favoring venereal disease and spreading a knowledge of the means of prevention of conception.

Wolf discusses various measures designed to combat this reduction of the birth rate. The encouragement of marriage is an important remedy. Statistics show a tendency to lessen the number of marriages or to postpone the beginning of married life. It is evident that increase in the number of marriages will not necessarily increase the number of births, if means of prevention, abortion and venereal diseases continue to exert their unfavorable influence. The taxation of bachelors is suggested and has been tried by some communities. The sums assessed on bachelors are usually so insignificant as to have little influence with a man who objects to marriage from economic reasons or because of ill health.

The better care of illegitimate children is urged as a compensatory measure, because the death rate of these children is nearly double that of those born in wedlock. Wolf also urges the importance of venereal disease as a factor in the declining birth rate. These diseases, he shows, are far less frequent in the country than in the large cities and thus correspond with the birth rate. One of the most powerful influences in stemming the rising tide of depopulation will be found in efforts to prevent and cure venereal disease.

**Overpopulation and the Cost of Living.** The medical profession is vitally interested in this modern discussion of birth rates. We must recognize that the reduction of the size of families is a world-wide movement that has

been going on millenniums, but only noticed for a century. It is only one of the ways in which thinking people try to ease up the struggle for existence and make survival more certain for their healthier, fewer, better raised offspring, says C. E. Woodruff.[5] But it must be known that at the present rate there are still produced enough men to overstock the labor market and make it impossible to employ them all. It may be remarked that few people realize what a narrow margin separates us all from starvation. Before harvest time, the last year's crop is nearly all eaten up; indeed, most foods are perishable. If all harvests were suddenly destroyed the world over, the foods in stock would not keep us alive long enough to plant the next year's crop, even if we had the seed. Famines are permanent unavoidable phenomena, existing even where there is abundance of wealth, as in India. Local famines, though, by leaving more food for the survivors, will never permit the world to reach that degree of distress which so worried Malthus.

The interest of physicians centers in the fact that a certain percentage of society—the least efficient—is in such chronic want that proper nutriment is beyond its reach. It will not do to say it ought to be given them when we see shiploads of food leave our harbors purchased by abler men abroad. We cannot prevent owners from selling to the highest bidders even while there are thousands who are underfed here. And even in northwestern Europe where our food goes there are people unable to buy that imported wheat and meat. So we witness children growing up defective the world over through sheer underfeeding. Nor will it do to say that in time we shall raise enough food for all, because man has been at that very thing and without success ever since he planted the first grain. A thousand years is not likely to change a natural phenomenon which has existed for many millions, and has always been a large factor in picking out the fittest for survival.

Nor will it do the least good to divide up the wealth now so unequally distributed. It may be necessary on other grounds to spoliate individuals of too much wealth,

(5) Med. Record, Aug. 10, 1912.

but that depends entirely upon the way they use it or misuse it. The general opinion is now crystallizing that the wealthy, in return for protection of their riches, should devote their lives to the people who allow them to have wealth. The landed proprietors do this in Europe, particularly in England, which is administered largely by the unsalaried. Or the wealth itself may be devoted to public ends. But it will not diminish poverty to seize that wealth of millionaires and divide it up pro rata. Each man's share would feed him less than four months.

It is now acknowledged that ever since the first protolithic primitive man, or man-ape, picked up his first club or stone as a tool to help in getting food or shelter, he has been constantly improving those tools to get more of that food and shelter so as to survive the more certainly. Publicists still use the absurd expression, "labor-saving machines," whereas they all know that the only result in our labor competition due to overpopulation is increase of product. The sweatshop worker bending over an electrically driven sewing machine works just as hard and just as long as the needlewomen of a century ago, and gets just about as much of the necessaries of survival in exchange for her labor.

There is now a vast difference in what is needed for survival. Here is where physicians can again enlighten economists in their discussions of the cost of living. Every invention permits a laborer to accomplish more than formerly, and he can demand more in exchange so that he saves up or buys luxuries without which man has before survived. In either case he is able to raise frail children who formerly perished for the want of extra foods and other luxuries. There has been a progressive racial physical enfeeblement from this kind of survival of the fittest, the more efficient workers, and as a result we cannot possibly live as our ancestors of a few centuries back. "The luxuries of one generation become the necessities of the next." We must now have better food, clothing and houses or we perish.

The price of food thus regulates itself automatically, and no human laws have ever succeeded in getting it down to the purchasing power of everyone, though in-

numerable attempts have been made. The birth rate keeps it automatically just out of reach of the purchasing power of the submerged tenth, no matter what the actual price or how greatly the crops are increased by modern methods. The rule is absolute—the normal wage the world over, by reason of the competition of overpopulation, is and always has been the bare necessities of existence for man and wife and baby. Those below the average cannot get these necessaries by their own exertions. No ordinary mechanic can support many children, and never could. These are cruel facts, and by ignoring them sociologists are doing much injury in their efforts to improve conditions.

Modern machinery has enormously reduced the labor of production, but the actual price has not varied in like proportion, because the demand of increased population keeps pace with larger crops, and the price of our daily bread is the same as ever—our daily labor—omitting the other necessaries for the sake of brevity. The farmer grows much more food for his time than ever before, and would get rich if he could demand an equally increased amount of goods in exchange for his surplus. But he is as poor as ever, for several reasons. His own needs are more, and if his labor was very valuable there are competitors who would overbid him for his rented farm. This actually occurs, and the rents rise so that he has left only enough to live on. This is why the tendency is for farms to diminish in size to the point just sufficient to feed a small family and give a tiny surplus to sell for other necessaries. The land owner is the real beneficiary of the competition of overpopulation. He gets the unearned increment. That fact is so galling that many economists think it will be taken away from him in time.

The medical profession must face conditions which, as in Europe and Asia, make it impossible for a sick workman to hire help—doctor or nurse—to buy medicines, or even the food to tide him over until he can again earn a bare existence. Moreover, it takes a wise man to foretell whether the fewer exceptional men who can save for a rainy day will be able to support these indigent sick, all the Lloyd-Georges to the contrary notwithstanding. As

for taxing everyone for the purpose, that only increases the cost of living and will prevent a few more from getting the bare necessities. We've been living in a fool's paradise, paved with gold, whose brilliancy has so blinded us that we cannot see into what we are drifting by our over-generous call to the failures of the world to come over and share our beef, and wheat, and coal and iron. We should like to get the wealth back now.

It is evident then that the actual amount of gold given for a day's common labor depends solely on the local cost of living, and it cannot be less. In Japan the wage is between 15 and 20 cents, for that is ample where the houses are cheap, little clothing, fuel, and furniture needed, and the coolie intelligence so low as to need few relaxations. Mechanics and artists can get 50 to 70 cents and this partly relieves the wife of the necessity of laboring. In India it is far less, but it purchases what the two dollars do in New York—survival and but little more. That is, the natural wage the world over is just enough to keep a small family alive. If a man gets more, he is more or less exceptional. If less, he is a pauper.

Industries could not exist if there was not an idle mass to call on to fill vacancies instantly, for if a single department cannot get men, the whole works must close. That is, civilization depends upon an unemployed mass for emergencies, and if there was enough food to go round there would be no competition compelling the unemployed to jump into the vacancies. If any of the bizarre plans to end unemployment could possibly succeed, it would thus destroy civilization. So we do not know what will be our state a century hence, nor whether we have intelligence enough to create artificial conditions raising us above the normal elsewhere. Of only one thing can we be certain, and that is, the more numerous we are, the less wealth will there be for each of us, and the cheaper will be labor. This alone will have a vital bearing on the medical profession, and the present reduction of the number of medical students per 100,000 of population must continue, or few can make a living at it.

Everything is cheaper from the same causes except luxuries and food, and the latter is under an entirely

different law, due to our old habit of breeding to the limit of its production. Man needs more of everything else to survive and gets it. He needs more comforts and rest and gets them, too, but he needs exactly the same weight of food as ever. Modern machinery and methods enable a farmer to raise more food, as previously explained, but more people keep the price up to our working limit. It is nonsense to compare the dollar a bushel wheat of recent years with the shilling a bushel of two centuries ago without comparing the purchasing value of metal and how much of it a man can get by a day's work. As for the cost of meat, it must be remembered that it is entirely out of the reach of the vast majority of humanity—except, of course, a little fish daily or some pork now and then. The enormous present cost is perfectly natural, but it is bound to bring diseases of lack of nutrition and perhaps reduce our stature to that of similar ethnic types of Europe.

Finally, it is time to think of the future American descended from those elbowed out of overpopulated Europe because unable to make a living there, but who could do it here where competition did not exist? Great Britain deported her criminals for two centuries and we got a lot of them, and so we now have about three hundred times as many murders as England.

**Dangers of Industrial Occupations.** There is an economic movement under way in America today for the conservation of human resources, for the recognition of the humanitarian aspect as well as the commercial. As one employer has expressed it, "The care and improvement of animate machinery is at least as important as of inanimate machinery." The needless waste of young lives, the prevention of disease and unnecessary illness in industrial workers are issues that demand our attention and our earnest, concerted efforts.

The dangers to health of industrial occupation may be separated into two general classes, says E. P. Buddy,[6] namely, specific diseases caused by a particular industry or group of industries and those general diseases to

(6) Jour. Mo. State Med. Assoc., March, 1918.

which certain trades produce a predisposition. Specific diseases occur principally in the industries using poisonous products; this term includes all substances which in their production or use endanger the health of the laborer, whether gases, fluids or solids, whether entering the body through the mouth, nose or skin, but in any event producing reactions more or less harmful, the degree of harmfulness depending on the individual, the poison and the dose. Poisonous material gains admission to the digestive system from unwashed hands, as in eating, chewing tobacco, smoking, picking teeth; from putting nails, paint brushes, pencils, etc., in the mouth; from unclean food, contaminated by being left open in work shops. Some poisons may be inhaled and a part swallowed with the saliva.

Poisons gain access to the respiratory system chiefly through inhalation. The skin is a source of entrance for poisonous material through abrasions, lacerations, hangnails, and some poisons, such as lead, quicksilver, picric and prussic acid may pass through unbroken skin.

"Far from being safer, American methods are often more dangerous than European," says Dr. Hamilton. While the German and English workmen are not only better protected and also under the supervision of an experienced physician, the American workman, as a usual thing, is under no medical supervision at all. The report of the medical investigation committee of Illinois shows that in white-lead factories employing 450 men, sixty cases, or one in 7, were poisoned, while in England only five cases out of 1,320, or one in 264. Aside from the greater dangers arising from our methods of work, the general ignorance of the hygiene of the lead trade among employers as well as employees, is an important factor in making this occupation dangerous. Owing to lack of proper legislation prescribing the necessary precautions and medical supervision, industrial plumbism is as frequent with us as it is serious. There is no legislation in the United States, except in the State of Illinois, which obliges an employer to remove poisonous dust and provide adequate equipment for personal cleanliness.

Preventive measures should include abolition of dust,

respirators for workmen, short hours, for fatigue is a predisposing factor, ample washing and bathing facilities, and the change of clothes to avoid carrying the poison home. There should be no eating in the workroom. Chewing tobacco to many gives a false sense of security. While the expectoration clears the mouth of lead dust, the danger of taking lead into the mouth from the plug which has been in lead-smeared trousers or handled with lead-smeared hands must not be overlooked.

**Gonorrhea in History and in Society.** F. Schrieman[7] delineates the nature and results of gonorrhea, its existence in ancient times, and the desirability of education regarding it. He quotes from Leviticus to indicate how plainly the Mosaic Law spoke regarding the disease. The strictness of these regulations contrasts strongly with the laxity of modern times. The author continues:

"As we see above, very plain language was used, and not to physicians alone, but to the people. The boy and girl, the man and woman, were taught this code of sexual hygiene and sexual morality so that sufficient understanding would prevail to guard against the spread of this disease. This Mosaic code has served a good purpose. For these thousands of years it has kept the Jewish race more free from venereal diseases than any other race. It goes to show that knowledge regarding venereal diseases is productive of good. This fact should give us courage, and should prompt us to preach the gospel of sexual purity over and over again. Do, as did Cato of old, who, for thirty consecutive years, every time he arose to address the Senate, began, 'Carthage must be destroyed.' Carthage was wiped out and gonorrhea can be. So this campaign in sexual education must be kept up until every boy and every girl, man and woman, has an understanding of this plague, sufficient to guard against the disease. Gonorrhea in Old Testament times had a legal standing; those having the disease were isolated and quarantined. Why has gonorrhea no legal standing today? Why do we not isolate those that have the disease? Why do we not put up the sign 'Gonor-

(7) Jour. Mo. State Med. Assoc., March, 1913.

rhea Here'? Why is it that this disease is so widespread and why do we not put forth more of an effort to limit its spread?

"One reason that it is so widespread is our double standard of morality, we exact a higher standard of morality of woman than we do of man; and another reason is because the dictum has gone forth and held sway all these centuries that sexual matters must not be spoken or written of, that it shocks the moral sensibilities, and that ignorance is synonymous with innocence. These sentiments have been an effective bar, in the past, in educating the people. Only in recent years some few have overridden these sentiments in speaking and writing in plain language, about sexual matters. Among physicians this subject is being discussed, but it does not reach the laity. Education alone will stop this terrible injury that is being done to national health. This false prudery, this dictum, that sexual matters must not be spoken of, that boys and girls must remain ignorant as regards sexual matters, sexual hygiene, is wrong in theory, is wrong in practice. The fullest and the widest knowledge is what is needed, and sexual purity and sexual morality will be a logical sequence. They are teaching the pathology of venereal diseases in open classes of male and female students in Leland Stanford University. Sexual hygiene is taught in Vassar. No student has as yet withdrawn because of shocked sensibilities. It will soon be impossible for any man to deceive his wife as to venereal infections, as definite information will be placed before the women of this country. The standard of morality will soon take care of itself, will adjust itself automatically, when sufficient understanding prevails among the laity young and old, in matters sexual, and authentic knowledge obtained from some authentic source. When that time comes, a person who is infected with gonorrhea will be considered a menace to society.

**Correct Bibliographic Style.** The importance of a correct bibliographic style is imperfectly taught in the schools. A majority of medical articles review, or depend largely upon, other writings. To indicate to the reader

the sources from which this foundation comes is the province of the bibliography, or list of references. This list varies in its character with the taste of the writer and the nature of the article which it accompanies. The article which gives merely an outline of a subject may have for its basis a text-book or a monograph, in which case the bibliography may be of the simplest. On the other hand, the worker who spends three years on a special line of research and reads hundreds of articles will give to his report a long list of references, amounting perhaps to several pages, citing books, magazine articles, pamphlets, and the like.

The bibliography is of importance, to the writer himself, says F. Place.[8] It retains in permanent form a record of the authorities he has used, to which he may need to refer at some future time. It shows how many or how few have held his opinion, or have differed. It may, too, be a list selected to show the progress of his subject historically, or the work of men who have added their might or mite thereto. The reader, however, will want to know in addition to the points noted above: "How accurately has the author quoted his authorities?" or "Is he justified in drawing such a conclusion from this author?" or "What is So-and-So's method or technice?" The bibliography should be the key opening the way to the required information; it should afford a means of getting before the reader the right articles in the least time. Therefore, the reference should tell: (1) Who wrote the article (the author). (2) What it is about (the title). (3) When it was published (the date). (4) Where it is to be found (if a periodical, its name and where in it).

"Incompleteness is probably the most frequent fault in bibliographies. To measure up to the standard of completeness, the references should be as full of fact as are the items in the Index-Catalogue and the Index Medicus. These items may be grouped under two heads: monographs and periodical articles; or more closely, 'independents' and 'analyticals.' By the first, the mono-

(8) Med. Record, Jan. 25, 1913.

graph or independent, we mean the book or pamphlet published by itself under its own title (not a reprint). The analytical is the article printed in a periodical, or the monograph which is printed in a 'system' or 'handbook.'

"A reference to an independent should include these details: *(a)* author's name with initials; *(b)* title of book; *(c)* edition, other than the first; *(d)* place of publication; *(e)* date of publication, or nearest ascertainable date when title-page reveals none; *(f)* the page, or pages, if a particular one is referred to. Here is such a reference: Campbell, F. R. The Language of Medicine. N. Y., 1888. p. 203-286. [The name and address of the publisher is also desirable.—Ed.]

"A reference to an article should contain: (*a*) author's name with initials; *(b)* title of article; *(c)* title of periodical in which found (usually in abbreviated form); *(d)* place of publication, except when the city's name appears in the title; *(e)* date (year) of issue; *(f)* series and volume numbers; *(g)* pages covered by the article (p. 203-286), or the first page only (p. 203). In ordinary lists the latter form is quite sufficient. Such references are these:

"Mosenthal, H. O. A Case of Pancreatic Diabetes Mellitus. *Arch. of Internal Med.*, Chic., 1912, IX, 339.

"Coryllos, P. Adamantinome kystique du maxillaire inférieur. *Bull. et mém. de la Soc. anat. de Paris*, 1911, LXXXVI (sér. 6, XIII), 520.

"Collins, J. Aphasia. *Modern Med.* (*Osler*). Phil. & N. Y., 1910, VII, 308.

[As experience has shown that there is danger of mistakes in transcribing Roman numerals, the Year Book Publishers prefer where possible to give the exact date, for example: Arch. Int. Med., Chicago, January, 1914; or, N. Y. Med. Jour., Mar. 1, 1913.]

"Periodical titles and their abbreviations should be a matter of concern to the author. In most cases an abbreviated title is possible, and as a matter of economy is necessary, but it should never be allowed to degenerate into a cryptogram. The shortened form should indicate to the reader the words abbreviated, and, not less impor-

tant, the language thereof. 'Arch. Oph.' rather should be 'Arch. f. Ophthal.' 'Arch. d'ophthal,' or 'Arch. of Ophthal.' The inclusion of the place of publication aids in the identification of the journal. Such an abbreviation as 'A. f. O.' may be used, as in von Noorden's book, if a key to the titles accompanies the list. On the other hand, it is hardly wise to use the full titles, even with the words abbreviated, in the case of a few, usually German, periodicals with very long names. Instead of writing 'Jahresb. ü. d. Leist. u. Fortsch. a. d. Geb. d. Neurol. u. Psychiat,' one may use 'Jahresb. Neurol. u. Psychiat.'

"Do not translate titles. Do not clip them of important words. 'Deutsche Zeitschrift für Chirurgie' is neither 'Zeitschrift für Chirurgie,' nor is it the 'German Journal of Surgery' for purposes of reference. If the reader is unfamiliar with German, a translated title will lead him astray; if he does read that language he needs no translation.

"Above all—and this is the law and the prophets—take no one's word for the accuracy of a reference."

**Disease from the Autopsy Table.** W. D. Fullerton[9] describes his observation of an autopsy in a large hospital, the patient having died of typhoid fever. A basin containing running water was on the table, and with a sponge the blood and other fluids were mopped out of the body and the sponge rinsed in the basin, the overflow from which apparently drained into the sewer. The bowels having been taken from the body, they were opened and washed in the sink, which also apparently drained into the sewer. The other viscera as they were removed were repeatedly washed in the basin on the table. The autopsy completed, the table and sink were washed clean with tap water which drained off and then disinfecting solutions were used to complete the cleaning up.

He found that no disinfection of the washings was made; they went direct into the sewer. Believing that the condition must be local, he has undertaken to investigate the matter and has received information concern-

(9) Cleveland Med. Jour., May, 1913.

ing twenty-two hospitals in the United States, one or more from Germany, Panama, and the Philippine Islands. Though these represent the practice in large and well-conducted hospitals, there was not a single incidence in which any means were taken to sterilize the washings from an autopsy. He describes a method which may be employed to secure such sterilization, and sums up his results in the following conclusions:

1. It is grossly negligent and inconsistent with modern medicine to contaminate sewage with infected autopsy washings, and thereby frequently to expose entire communities to infection, directly or indirectly.
2. The washings from every autopsy where an infection is present should be sterilized, by one of the methods suggested, or otherwise, before consigning to the sewer.
3. Sterilization by heat, when all cases are considered, is the most rapid, thorough and convenient and accomplished with least labor.
4. If a supply of live steam be not constantly at hand, natural or artificial gas is the cheapest means. When these methods cannot be employed Liquor cresolis compositus or formalin are the best agents to use. [If autopsy washings are to be sterilized, why not all hospital sewage? And if hospital sewage, why not municipal, too? There can be only one objection, the expense; but that is a large objection.—Ed.]

**Causation of Monsters.** In early history we find congenital abnormalities of this nature ascribed to *supernatural* agencies. It was believed that the "gods" had a direct influence in their production. Thus for the birth of a monster the wrath of the "spirits" was the reason of the visitation, and they were invoked to appease their anger. For many centuries the constellations were held responsible, and the sun, moon and stars were given credit for an untoward influence in reproduction; thus we find the terms "moonface" and "monster" to be synonymous in early writings, states C. J. Kickham.[1]

Again we find monstrosities ascribed to abnormal seminal or menstrual discharges, some believing that it

(1) Boston Med. and Surg. Jour., July 4, 1912.

was only the seminal secretions which controlled the phenomena and others that the menstrual discharges had a malignant action in producing the resultant monstrosity; this latter idea may be the foundation of the old Hebrew law prohibiting intercourse during the "unclean" period. It remained for Aristotle to teach the dual causation. He held that there must be pathologic conditions in both male and female elements of reproduction. It must be remembered that at that time the ovum and its rôle in reproduction was unknown. Another theory was that of hybridity, that conception may be the result of coition between higher and lower forms of life, with the resultant fetus having the physical peculiarities of both; thus a "dog-faced" monster would be thought due to coitus between a dog and woman, for it was held, by the majority, that the male was the sole germinating factor and the female more or less of a passive host for the development of the fetus.

Next in order is the mental theory, according to which thoughts or imaginations or dreams changed the developing fetus into a monstrosity. Maternal impressions can influence the embryo only indirectly by interference with its nutrition or by causing sudden uterine contractions with consequent pressure on the ovum or embryo.

Disease of the embryo or fetus or its adnexa is unquestionably a cause; thus we find that changes in the amnion (which bears the same relation to embryonic pathology as does the placenta to fetal pathology) will result in monstrosities. These pathologic changes in the amnion are due to (1) pressure, (2) disease, (3) arrested development. We find not infrequently adhesions between fetus and amnion, also amniotic bands which seem to be a potent cause of abnormalities. It has been demonstrated in animals that changes in the amnion are followed by changes in the embryo and fetus. The cord by pressure on a limb or other portion of the fetus, or by forcing into a malposition a normal member, may by interference with nutrition, or by mechanical interference with growth, result in pathologic changes. Some of the minor abnormalities may be the result of disturbances in the fetal period; but the majority of monsters can be

accounted for only by morbid influences acting on the embryo itself or the germinal cells.

**The Diagnostic Hand.** A. M. Corwin[2] deals figuratively with diagnosis as follows: Diagnosis deals with facts that stand, while the hypotheses of empirical therapy pass. Diagnosis—the art of finding out what is the matter and where—is the room in which the doctor lives. Upon the one side opens the window of causation, upon another prognosis, and upon a third opens the door of treatment. Symptoms are mere straws which show which way blows the clinical wind of disease; empirical medicine takes the straws for the wind itself; hence its dictum, for every symptom a drug. To know thoroughly the condition of the patient is our primary aim; to label the condition back of the symptom complex is incidental.

*A Symbol of Diagnosis.* The human hand in the act of seizing is a fine emblem of general diagnosis, which, to know thoroughly, seeks to grasp the entire field of clinical facts. There are five definite groups of data, the facts in each group so related that the generic idea covering them may be assigned to each digit according to its efficiency. We say human hand, for, be it remembered, the thumb of the monkey is rudimentary. The facts of family history are least important in determining a patient's lesion and, therefore, are naturally assigned to the little finger. But, cut off this finger, and how handicapped is the grip. So hereditary tendencies are often of considerable significance in sizing up difficult cases, where every bit of light is needed. The data of personal history, of next importance logically, fall to the lot of the third finger; their value in diagnosis is obvious. The middle digit, strong and prominent, may be safely dignified with the contributions of the laboratory, extremely valuable in the diagnostic work of up to date, modern medicine. The microscope, test tube, and culture medium, once strangers to scalpel and prescription, are today their boon companions. The laboratory opens directly out of the sickroom. But, as the index finger most easily coöperates with the thumb in picking up a

(2) N. Y. Med. Jour., Dec. 23, 1911.

thing, so are the sensations of the patient leading pointers to his trouble. They are, therefore, the property of the first digit. It is the sufferer's symptoms that are wont to focus our attention upon the seat of his disease, but distant complications or incidental lesions must be discovered, perhaps through other channels.

Most powerful of all the five is the thumb itself, as has been said, and upon it falls the chief responsibility. Amputate all the fingers, and the thumb, still opposed to the palm, makes a very respectable prehensile showing. The patient, deaf, dumb, and unconscious, without friends, may fall into the hands of the skillful physician, who, by the aid of his own trained senses, is able to make out a case. In other words, if all means of diagnosis were to be denied us save one, we should naturally reserve objective examination as the most essential.

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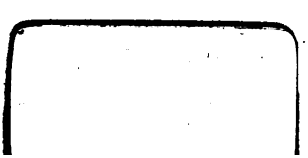
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